OCTOBER 15, 1912
VOL. IV. :: NO. 2

SINGLE COPIES, 25c.
ONE YEAR, $2.00

THE COMMERCIAL CAR JOURNAL

Entered as Second-Class Matter at the Post Office at Philadelphia, Pa.

PEERLESS Power Dumping Truck for Contractors and Coal Dealers

FIVE tons of loose material can be unloaded by the driver alone in thirty seconds. One lever trips the tail gate, another turns the power of the truck motor into the hoisting screw. The shut-off is automatic. The truck can proceed as soon as the load is dumped, as a touch on the control-lever will lower the body while the truck is in motion. Again the shut-off is automatic.

The hoisting screw does not extend above the body top—it telescopes, saving space, and protecting the screw threads when the body is down. Operation is by bevel gears driven by chain and sprocket. Full control of tail gate and up-and-down motions from driver's seat. An automatic trip stops the movement at the right point.

The Peerless Power Dumping Body with screw hoist has been especially designed and constructed by Peerless engineers. Width 4 feet; length approximately 12 feet; height depends on material carried. Suitable for ashes, cement, earth, gravel, sand, crushed stone, mortar, asphalt, common bricks, and other similar building materials, and for coke and coal.

We will submit blue prints and determine exact specifications according to the requirements of the service.

TRUCK DEPARTMENT
THE PEERLESS MOTOR CAR CO., CLEVELAND

Builders also of Peerless Passenger Cars

PUBLISHED THE 15TH OF EACH MONTH

CHILTON COMPANY

MARKET & 49TH STS. PHILADELPHIA

Locomobile Five Ton Truck used in construction work

You can save tire expense by using

Interchangeable, Demountable Tires

Because only one size need be carried in stock.

This means your investment in spare tires will be less. Your chances of loss through rubber deterioration will also be decreased.

Because the actual wear is lessened.

As an illustration, suppose one of the dual rear tires should need replacement.
If front and rear tires are not interchangeable a new and unworn tire must replace this one.
The unworn tire will then carry all the load on that wheel.
This is a heavy overload. It means rapid deterioration.
If tires are interchangeable, a front tire may be substituted for the rear tire that needs replacement. As all tires are worn to nearly the same size, each will take nearly the same load and give the most service.

Other important features of the Locomobile Five Ton Truck are :

Every part designed for heavy truck duty.
Highest standards of workmanship.
Best materials used.
Motor—45 H. P. at 900 R. P. M.
Five bearing crank shaft.
Four speed transmission.
Large transmission gears.

These features combined only in the Locomobile Five Ton Truck.

40″ x 6″ tires, single front, dual rear.
Driving chains each stand 44,000 lbs. pull.
Differential lock.
Steel wheels.
Dry disc clutch.
Sprags.
All parts easily accessible.

Ignition and oiling system not subject to driver's control.

THE LOCOMOBILE COMPANY OF AMERICA, Bridgeport, Connecticut

Service and Sales Branches

New York	Chicago	Philadelphia	St. Louis	Minneapolis	Baltimore	Oakland
Atlanta	Los Angeles	Bridgeport	San Francisco	Boston	Pittsburgh	Washington

This advertisement is Number 4 in a series descriptive of Locomobile Design and Construction

THE PUBLISHERS' PERSONAL PAGE

A WORD TO THE WISE IS SUFFICIENT

"Penny Wise and Pound Foolish"

describes accurately many a business concern of the present day. Why worry along with those old horses and wagons when you know that they are inadequate and that your clientele expects better service, such as many of your competitors are now supplying with motor trucks? YOU cannot afford it, you say. Here is where the truth of the old adage applies. Don't be so blinded by the first costs that you cannot see the inevitable results of the use of motor trucks: better service, more intelligent help, increased territory, and a wider grasp on the entire situation. Do not delay until others of your line have perfected their motor delivery systems. You may be saving the initial cost, but you are losing the great gain.

Do You Study

the latest methods of manufacture, the newest machine tools, the most perfect processes and formula in connection with the production of your product? Certainly you do, if you are up to date. You keep posted on every detail of the manufacturing processes, and watch with ferretlike intensity every opportunity for improvement.

You Have Failed

to appreciate, however, that the delivery system is often of as much importance as any other individual item or even as a group of items in the manufacture of the product. Its correct or incorrect solution means as much on the right or wrong side of the ledger as other steps in the manufacture.

How Is It

that you jealously watch each of the minor details of these processes, that you read and study and digest trade literature on your particular line of manufacture, yet wholly ignore the very apparent fact that modern delivery by motor trucks is just as much and as important a process in the manufacture of your goods as any previous process through which the goods pass?

Do You Read

carefully any trade publication on the subject of delivery by motor-driven commercial cars? Have you given this subject the same careful consideration and painstaking thought that you have each and every vital step in your manufacturing processes? If you have not, you are committing a rash indiscretion, which will just as surely have a damaging effect on the future of your business as the same oversight in regard to other steps in the manufacture of your product would have.

Subscribe

to the COMMERCIAL CAR-JOURNAL, which is published monthly on the 15th day of each month, by the Chilton Company, 49th and Market Streets, Philadelphia. It exactly fills your needs, in fact is a journal written expressly for the busy business man. It gives in condensed form what others are doing with commercial cars, and outlines the best methods, describes in detail the new machines, and in general looks after the interests of the merchant who uses trucks. Subscription price, $2.00 per year.

Our Information Bureau

stands ready to assist all our readers with their motor delivery problems. We employ experts for the purpose of answering all questions propounded to us. If you are a motor truck user this department should be valuable to you. The solution of a single question may mean many hundreds of dollars to you and your business. Why hesitate at such a trifling expense as $2 for a subscription? Don't hesitate, send the money now at our risk, it is an insurance which is cheap at the price.

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The Autocar

Finley Acker, President of Philadelphia Chamber of Commerce, in a recent address before the Atlantic Waterways Convention said: "Every proper effort should be made to provide good roads and to encourage the development of motor trucks of maximum efficiency and economy of operation in order that the cost of this INDISPENSABLE FORM OF TRANSPORTATION may be reduced to a minimum.

Mr. Acker, who is the head of the firm of Finley Acker Company, Philadelphia, uses AUTOCAR motor vehicles in his delivery service.

Seven hundred other individuals and corporations bear testimony that the AUTOCAR has been "A GOOD INVESTMENT."

Write for catalog No. 4C

The Autocar Company, Factory, Ardmore, Pa. Established 1897

PHILADELPHIA	NEW YORK	NEWARK	BOSTON
23rd and Market Streets	428-430 / 435-437 W. 19th Street	418-420 Washington Street	642 Beacon Street

Continuous Efficiency Guaranteed

The Commercial Car Journal

VOLUME IV | PHILADELPHIA, OCTOBER 15, 1912 | NUMBER 2

The Electrical Exposition and Automobile Show of 1912, New York City

THE New York Electrical Exposition and Automobile Show opened October 9th with a luncheon in honor of Thomas A. Edison, in the New Grand Central palace, at Lexington Avenue and 46th Street, that date commemorating the thirtieth anniversary of the lighting of New York, by electricity. On this memorable occasion over three hundred guests of the New York Edison Company were present. Mr. Lieb outlined the history of the electric lighting and power industry with particular reference to the important part in this development played by the New York Edison Company.

The Electrical Exposition occupies three floors of the large New Grand Central Palace Building, and includes some one hundred and eighteen exhibitors, embracing industrial, commercial and household electrical devices, as well as exhibits by the Government.

Both pleasure and commercial cars are on exhibit, most of the well-known machines being represented. An innovation is the demonstrating track on the third floor, where vehicles can be shown under power. Only once before in the history of automobile shows have demonstrations been possible. Beside the track, which is wide enough for cars to pass, is shown the equipment of an up-to-date electric garage, as far as charging panels and apparatus for caring for cars is concerned.

A course of instruction in driving under the direction of the New York Electric Vehicle Association is also given prospective purchasers.

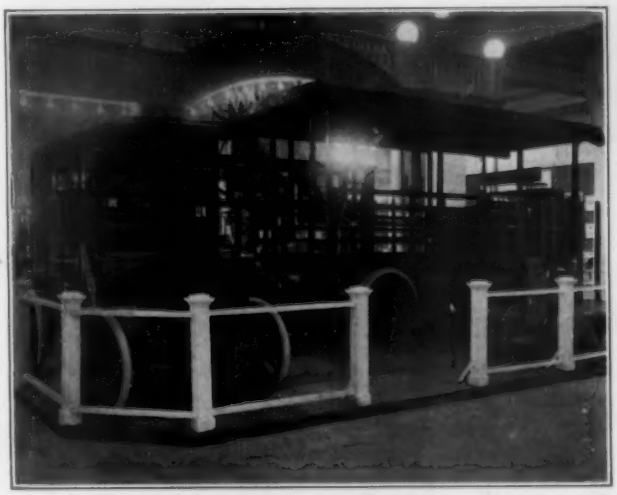


Exhibit of G. V. Company
Including small delivery wagons and large trucks as well as the new industrial truck shown at the right

Truck Exhibits

THE GENERAL VEHICLE COMPANY, Long Island City, N. Y., is exhibiting at spaces 45 and 46 a three and one-half ton truck built for Arnold, Constable & Company, a 1000 lb. wagon built for Black, Star & Frost (one of three), and a one-ton Industrial truck. Other G. V. machines are being shown on the demonstration track on the third floor.

THE ANDERSON ELECTRIC CAR COMPANY, Detroit, Mich., is exhibiting the Detroit Electric Commercial vehicles in the standard one, two and three thousand pound sizes, in the shape of complete cars and chasses. No new features are being shown, these cars being of regular design throughout. This company is also exhibiting a two-ton truck on the track.

GENERAL MOTORS TRUCK COMPANY is showing its five-ton truck, jacked off the floor, so that demonstrations of the control may be shown. The battery is carried above the frame under the front seats, and the controls are all accessibly located under a small Renault type hood at the front, this being an exclusive feature of the G. M. C. trucks. The drive through a flexible blade and many other features are unique and exclusive.

G. M. C. Electric
Attention is called to the neat hood at the front which houses the controller and other usually inaccessible parts

THE LANSDEN COMPANY are showing the Lansden electric trucks in 1-ton, 2-ton and 3½-ton sizes, the latter model being a novelty of the Show. This truck is a tank wagon, designed for street flushing and distributing oil for road purposes. A special feature consists in using a 1½ h. p. motor driven from the storage battery of the truck and operating

an air pump which maintains automatically a constant pressure on the fluid in the tank. As high as 140 lbs. per square inch is employed when distributing oil, which results in an absolutely uniform layer being deposited over the road surface, doing away with the puddles and irregularity which

Novel Lansden Tank Wagon
This vehicle is fitted with meter and air compressor

usually accompanies this work. The motor and pump are neatly arranged in a compartment at the rear of the front seat. The tank is so mounted that it can be quickly removed and replaced by an ordinary body so that the machine can be employed as an ash or garbage wagon, this being especially useful in municipal work.

The 2-ton wagon is shown which has been purchased by Adriance Machine Works of Brooklyn. It is employed in a novel manner. Upon it has been mounted a special crowning machine for beer bottles, and the truck is driven directly to the bottling works or brewery, at which it is to be demonstrated, and the crowner is operated by current from the truck battery. When not so employed the crowning machine is removed and replaced by a standard body and the truck used in the usual manner.

The 1-ton chassis embodies a number of novel features such as a lockable control lever under the steering gear, which is at the left; this lever automatically goes into neutral position when the brake is applied so that the car cannot be left with the brakes and current both on.

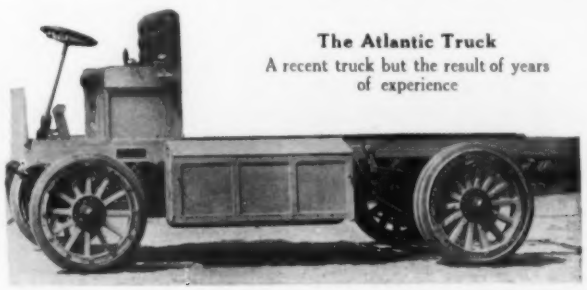
Drive is by side chain from an enclosed jackshaft of bevel gear type, the housing of which is directly connected to that of the single motor, which is mounted at the rear of the jackshaft. This gives a double reduction by means of the gears and the chains. The emergency brake is mounted directly on the armature of this motor and is entirely encased as are also the brakes on the wheel drums.

THE CLEVELAND-GALION MOTOR TRUCK COMPANY are showing the new Dynamic Industrial truck designed for hauling freight and baggage at railroad stations, on steamship docks, or in warehouses or factories. This machine has several novel features among which may be mentioned driving and steering by all four wheels. This permits of operating in the most congested places. The truck can even be driven side ways, which greatly increases its usefulness in this class of work.

THE STUDEBAKER CORPORATION are showing a special 5-ton brewery wagon, owned by George Ehret, the body of which is of special design by Louis Ehret. This large truck is claimed has a radius of 45 miles at about 8 miles per hour. A small 1000 lb. delivery wagon, suitable for retail merchants and fitted with panel body, is also shown. The standard 2-ton truck of 1913 model is shown with stake body.

THE BAKER MOTOR VEHICLE COMPANY, Cleveland, O., is exhibiting at this show a two-ton truck chassis with driver's seat. Some of the features of this chassis are the pressed steel frame of special alloy steel; continuous torque drum type controller; wheel steer; with controller lever mounted directly under the wheel; all articulating joints are bronze bushed. The motor is enclosed in an oil and dustproof aluminum case and turns in imported ball bearings. The reduction chain is of the Reynolds Silent Chain type. Individual grease cups are used in all places where it was found feasible to place them. A general service wagon of 500 lbs. capacity, and a speed of 20 m. p. h. is also featured. This car is for all kinds of light service, and is especially adapted for the use of Public Service Corporations.

THE ATLANTIC VEHICLE COMPANY also has a truck on the track, this being a three and one-half-ton Atlantic, while in the booth is shown the one-ton chassis. These trucks are built in one, one and one-half, two, three, three and one-half and five-ton sizes. They represented a large series of experiments,



The Atlantic Truck
A recent truck but the result of years of experience

and have been placed on the market only after exhaustive tests. The features claimed are long distances on a single charge, and economy not only due to current consumption, but also on account of the low cost of maintenance and repairs.

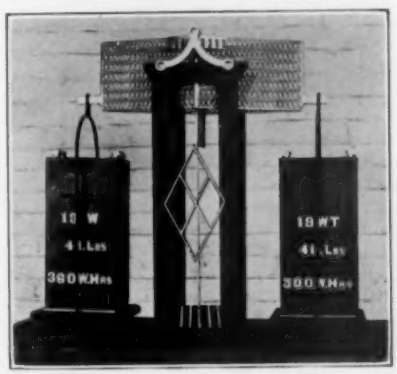
THE CHAMPION ELECTRIC VEHICLE COMPANY is featuring a new shaft driven Champion wagon at $1400, with lead battery and express body, and also show the chassis of a one-ton chain driven model. New and novel features are embodied in the shaft driven car. The batteries are neatly and accessibly located under the seat. The control is by wheel at the left, with lever under the wheel. The frame is of pressed steel, light, but strong, and the chain is made that the open or express body

The Champion
The new shaft-driven model is shown at the right

type weighs from 500 to 750 lbs. less than the usual 1000 lb. capacity truck. The small truck has a drop-forged I section front axle, and a pressed steel rear axle, of novel construction. The mileage on one charge is approximately fifty.

THE WARD MOTOR VEHICLE COMPANY, Concord Avenue and E. 143rd Street, New York City, is exhibiting a 1000 lb. wagon and a one-ton truck. This company is making a line of trucks from one-half ton to four tons capacity, which vary only in regards to size and weight. It is also making two smaller wagons, having live rear axles with single chain drive.

PHILADELPHIA STORAGE BATTERY COMPANY, Philadelphia, Pa., is exhibiting its well known line of electric vehicle batteries, the exhibit consisting of charts, cells, and exhibition batteries, clearly setting forth the characteristics of the Philadelphia tin plate batteries. The progress made in the manufacture of electric vehicle batteries from 1906 to 1912 is also being illustrated. The picture herewith shows one of the exhibits of this company, which illustrates the fact that both batteries are the same size in dimensions, but having different outputs.



An Exhibit Which Illustrates the Advantage in Weight and Capacity of the Thin Plates Used in the Philadelphia Battery

EDISON STORAGE BATTERY COMPANY, Orange, N. J., is exhibiting at space 77 the following: Train car lighting battery; truck battery of different sizes; batteries for automobile lighting and ignition; and a board showing the parts of an Edison cell. There is also shown a direct connected General Electric outfit, consisting of dynamo and a battery, together with a small marine switchboard, demonstrating a complete yacht lighting equipment.

GOULD STORAGE BATTERY COMPANY, New York City, is showing plates such as are used in stationary power plants for "stand-by" work, in Government submarine boats and in electric vehicles. Trays of batteries used to propel electric vehicles, both pleasure and commercial type, and to propel storage battery cars are also shown.

S. A. E. N. Y. BRANCH MEETING

At the September meeting of the Society of Automobile Engineers, held on the 11th, a Motor Testing Division was created. George W. Dunham, Herbert Chase, Professor R. C. Carpenter, H. L. Connell, and John O. Heinze (chairman) were appointed as five members of this division.

Papers read included "Proposed Substitutes for Pneumatic Tires," by Ethelbert Favary; "Requirements of Automobile Electric Lighting Systems," by Leonard Kebler; "Car Service Department," by C. Roy Matson, and "Carburetors and Fuels," by E. J. Stoddard.

New Incorporations and Increases

M. & P. ELECTRIC VEHICLE COMPANY, Detroit, Mich., increased capital from $50,000 to $100,000.

THE HENRY LEE POWER COMPANY, Chicago, Ill., has changed its name to Old Reliable Motor Truck Company.

CRESCENT MOTOR TRUCK COMPANY, Middleton, O., has increased its capital to $100,000. The output of the plant is to be doubled at once.

ATLAS CHAIN COMPANY, Bush Terminal Building, No. 4, Brooklyn, N Y., are removing their offices to 376 Birnie Avenue, Springfield, Mass.

H. & F. MESINGER MANUFACTURING COMPANY, New York City, has removed their offices and factory to Austin Place and East 144th Street, New York City.

PACKERS MOTOR TRUCK COMPANY, Warwood, W. Va., is increasing the capacity and output of the plant by installing machinery and employing about twenty-five more mechanics.

ROCKFORD MOTOR TRUCK COMPANY, Rockford, Ill., has been incorporated with $10,000 capital to manufacture and sell electric and gasoline motors. Incorporators are P. A. Peterson, Levin Faust and John Ledin.

STANDARD MOTOR TRUCK COMPANY has recently been organized and incorporated with $50,000 capital. The factory located at 975 Bellevue Avenue, Detroit, Mich., is 35 x 140 ft. Its product will be a truck of three-tons capacity with Standard construction throughout.

PATTERSON RUBBER COMPANY, Lowell, Mass., a corporation just formed with capital stock of $500,000, is building a large plant of five buildings. The new concern will employ ultimately 1,000 persons. The factory will turn out solid truck tires, pneumatic tires and tubes, as well as mechanical rubber goods.

SELDEN TRUCK SALES COMPANY, Rochester, N. Y., has just been incorporated with $150,000 to handle the entire product of the Selden Motor Vehicle Company. The object of the selling organization is to sell the trucks on terms of easy payments. The Selden Motor Vehicle Company will continue its pleasure car business as heretofore.

D. F. POYER & COMPANY, Menominee, Wis., manufacturers of Menominee trucks, has changed its name to D. F. Poyer Company, a corporation with $75,000 capital. The new concern takes over the interests of W. S. Carpenter. The officers are: D. F. Poyer, president; F. J. Trudell, vice-president; Harry T. Emerson, secretary and treasurer.

POLACK TYRE & RUBBER COMPANY, New York, who succeeded the Maine corporation of the same name, will begin the manufacture of its truck tires in this country, which heretofore have been produced by the Pennsylvania Tire & Rubber Company, of Jeannette, Pa. This company has closed a deal for a plant in Bridgeport, Conn., in which the necessary machinery is now being installed.

SWINEHART CLINCHER TIRE & RUBBER COMPANY, Akron, O. Dissatisfaction among stockholders and the Board of Directors caused a number of changes in the personnel of the company. W. W. Wuchter, president and general manager, retired. He will be retained in the employ of the company. He was succeeded by T. F. Walsh. C. O. Baughman was re-elected secretary and R. A. May, treasurer.

PERSONAL MENTION

C. C. McKINNEY NOW WESTERN MANAGER CCJ

C. C. McKinney has been appointed Western manager of the COMMERCIAL CAR JOURNAL with headquarters in Chicago. He will represent us in the territory West of Buffalo.

Mr. McKinney has been connected with trade papers and also, for several years, with the Commercial Car business. He has a wide acquaintance and is well liked in the trade.

We bespeak for him the courteous attention of those on whom he may call in our interest.

E. B. WILSON, sales manager of Poss Motor Company, Detroit, Mich., has tendered his resignation.

GEO. M. CUSHMAN, formerly of the Buick sales force, Boston, Mass., has joined Fred. Walsh as manager of truck department.

M. E. GRABLE has been appointed New England manager of the Universal Motor Truck Company, 183-93 Pleasant Street, Boston, Mass.

C. E. WILLIAMS, formerly connected with the Columbus agency for Speedwell cars, has been appointed manager for the White cars in Columbus.

A. W. BROWN, formerly traveling representative of the Herreshoff Motor Car Company, Detroit, Mich., has resigned to enter the motor truck field.

J. W. CULLY, formerly New York salesman of the Swinehart Tire and Rubber Company, has been appointed manager of the Detroit branch.

A. L. TALBOTT has been appointed manager of the Atlanta Branch of The Swinehart Tire & Rubber Company, succeeding C. E. Holmes, resigned.

CHARLES OSDYCK, former general purchasing agent of the General Motors Company, Detroit, Mich., has secured an electric shifting gear device which he will market.

T. P. MEYERS, of the General Motors Truck Company's plant at Pontiac, Mich., has been transferred, temporarily at least, to the New York City headquarters.

E. W. ARRASMITH, formerly connected with the sales force of the Buick Motor Company, Kansas City, Mo., has joined the Oakland force in Kansas City.

W. B. CONDIT, formerly with Kelly Motor Truck Company and Continental Motor Company, is now with the Webster & Perks Tool Company, Springfield, O.

JOHN C. HENDERSON, one of the best known men in the electric field of Boston, has connected himself with the Woods Electric Company, of Chicago, as its eastern traveling representative.

FRED THOMAS, brother of E. R. Thomas, of E. R. Thomas Motor Company, of Buffalo, has been appointed special traveling representative with the United States as his territory for the Lozier.

S. M. WILLIAMS, sales manager for the Peerless Motor Company, in charge of the southwest, will make his headquarters in Kansas City, Mo., with the Holcker-Eiberg Manufacturing Company.

HERBERT S. LANDELL, who has been intimately associated with the automobile business for a number of years, has joined the Oakland Motor Car Company's Philadelphia branch as retail sales manager.

ALLEN BAKER, of St. Louis, has concluded arrangements with the Dayton Auto Truck Company, of Dayton, O., for the sale of "Durable Dayton" trucks in St. Louis and surrounding territory.

C. C. KENNEDY, formerly in the insurance business in Chicago, has joined the sales force of the Goodyear Tire & Rubber Company, in Detroit, and will take care of the truck tire end of the business in the central district.

W. P. KELLY, for four years with the Oakland Motor Car Company, Pontiac, Mich., has been made superintendent of the plant. The position was formerly held by two men, Mr. Kelly being one. He now has charge of the plant alone.

A. T. CARNAHAN, tire salesman of The Swinehart Tire & Rubber Company, has been appointed District Manager in charge of Ohio, West Virginia, Kentucky, Western New York, Western Pennsylvania, and Eastern Michigan.

J. H. CONWAY, recently connected with the American Locomotive Company, of Providence, R. I., has taken charge of parts department of the Service Station for Alco trucks and touring cars, which has been established at 435 Turk Street, Oakland, Cal.

R. B. CURTISS, sales manager of the Royal Equipment Company, resigned his position to accept a district managership of the Chase Motor Truck Company, with headquarters in Cleveland, O. His territory will include Ohio, West Virginia, Kentucky, Indiana, Michigan and Western Pennsylvania.

BRENT B. NEAL, assistant manager of the Speedwell Motor Car Company, of Illinois, has become associated with the Peerless Motor Car Company, Twenty-fifth and Michigan Avenue, Chicago, Ill. He is now traveling representative of the Peerless in Illinois, handling both the wholesale and retail departments.

C. W. EGGERS, who for the past two years has been traffic manager for the Overland Company, has been made general traffic manager for the Willys-Overland Company, the Garford Company, Elyria, O.; Gramm Motor Truck Company, Lima, O.; Federal Motor Company, Indianapolis; Morrow Manufacturing Company, Elmira, N. Y.

J. D. PORTER, sales manager of Garford Company, Elyria, O., has moved from Toledo, to Elyria, where he is organizing his staff to take care of the much larger production for the ensuing year. H. G. Fitch, who has been assistant general manager of the Overland plant at Indianapolis, has been transferred to Elyria as general manager of Garford Company.

H. E. RICE has resigned his position as advertising manager of the Atwater-Kent Manufacturing Works and will be associated with the Schoen-Jackson Company, manufacturers of the Feps carburetor, as general sales and advertising manager. He has been in the automobile business for several years, after long experience in technical and commercial activity in the electrical and engineering field.

New Factories and Trucks

SELDEN MOTOR VEHICLE COMPANY, Rochester, N. Y., has put a one-ton truck on the market.

LOZIER MOTOR COMPANY, Detroit, Mich., is planning big addition to plant on Mack Avenue in the Spring.

WHITE COMPANY'S, Cleveland, O., new 240 x 160 ft. factory will be ready for occupancy about December 1st.

TOLEDO MOTOR TRUCK COMPANY, Toledo, O., is building a one-story, 54 x 236 ft. brick and structural steel building.

PEERLESS MOTOR CAR COMPANY, Broadway and 57th Street, New York, N. Y., is making alterations on factory.

MILLER & COMPANY, W. Sixty-third Street, New York, N. Y., has added used truck department to their establishment.

VELIE MOTOR VEHICLE COMPANY, Moline, Ill., are building 80 x 120 ft. addition near present factories. Cost, $15,000.

G. & J. TIRE COMPANY is erecting warehouse 80 x 175 ft. at Louisiana & Murphy Streets, Indianapolis, Ind. Cost, $100,000.

SWINEHART TIRE & RUBBER COMPANY, Akron, O., established a factory for solid tires at 618 Van Ness Avenue, San Francisco, Cal.

GOODRICH TIRE COMPANY, Akron, O., is erecting two-story addition to building there, as well as a six-story building in Philadelphia, Pa.

EX-CEL MOTOR TRUCK COMPANY, Jamesburgh, N. J., will build a new $35,000 plant, consisting of five factories, each one story high, and 50 x 100 ft. in size.

FORD MOTOR COMPANY, Detroit, Mich., has closed a deal for five acres of land on east side of Broadway, at Exposition Avenue, and will erect a four-story plant for assembling its cars.

PREMIER MOTOR MANUFACTURING COMPANY, Indianapolis, Ind., will build two large additions to its plant. These will be two-story brick structures, one 40 x 148 ft., and the other 40 x 140 ft.

RUTENBER MOTOR COMPANY, Logansport, Ind., is making extensive improvements in their plant; new machinery is being added and when the work is completed about one hundred men will be added to the force.

TIFFIN WAGON WORKS, Tiffin, O., is preparing to manufacture motor trucks, and expect to place a line of trucks on the market in the spring. Agents have already been signed up to market the trucks.

LONGEST BROTHERS COMPANY, Louisville, Ky., has sold its plant to the Edwards Motor Car Company, of the same city, who will enlarge it. C. G. Stoddard and H. J. Edwards, New York City, are interested.

PREMIER MOTOR MANUFACTURING COMPANY, Indianapolis, Ind., propose adding two new factories to present plant. The first addition will be 40 x 140 ft., to be followed by another 48 x 140 ft., both two stories high.

FORD MOTOR COMPANY, Detroit, Mich., is building large assembling plant in Minneapolis, Minn., which will take nine months to complete. The Ford Company plans to assemble 10,000 cars at this point in 1913.

KISSEL MOTOR CAR COMPANY, Hartford, Wis., has acquired a large plant at Center & Thirty-second Streets, Milwaukee, Wis., containing 200,000 sq. ft. of working floor space. The building was formerly occupied by Romadka Trunk Company.

CANADA STANDARD AUTOMOBILE & TRACTOR COMPANY is the name of the concern headed by A. R. Walton, general manager of the St. Louis Car Company, of St. Louis. Mr. Walton owns a factory at Fort Wayne, Ind., and will remove this entire plant to Moose Jaw, Can. The company is a $250,000 concern.

WILLYS-OVERLAND COMPANY, Toledo, O., has eight new buildings in process of construction at the Toledo plant, the largest of the group being a five-story concrete building, 102 x 127 ft., the others ranging from 34 up to 60 ft. x 48 up to 216 ft. These buildings represent an outlay of several hundred thousand dollars.

JOS. W. MOON BUGGY COMPANY, St. Louis, Mo., has commenced the manufacture of a light delivery car and truck. For the present two types of cars will be built, "Model A," a light 1000 lb. capacity car with shaft drive and pneumatic tires, and "Model B," a 3000 lb. capacity car with chain drive and solid tires.

KREBS COMMERCIAL CAR COMPANY, Clyde, O., has purchased the old Elmore factory from the General Motors Company. All the company's property in Clyde, south and east of the Wheeling tracks, is taken over by the Krebs Company. The Krebs Company holds a lease on their present quarters which runs for several months to come. The transfer does not include the new factory, which is still the property of the General Motors Company.

New Branches

MERCURY MOTOR TRUCK COMPANY has opened salesroom at 2009 Michigan Avenue, Chicago, Ill.

LOCOMOBILE COMPANY OF AMERICA, Bridgeport, Conn., has opened branch in St. Louis, Mo.

OAKLAND MOTOR CAR COMPANY, Pontiac, Mich., has opened a branch at 745 Barrone Street, New Orleans, La.

OAKLAND MOTOR CAR COMPANY, Pontiac, Mich., has opened a factory branch at 619 S. Twentieth Street, Birmingham, Ala.

OAKLAND MOTOR CAR COMPANY, Pontiac, Mich., has established factory branch at 1901-05 Euclid Avenue, Cleveland, Ohio.

MOTZ TIRE & RUBBER COMPANY, Arkon, O., has opened branch at 1409 Race Street, Philadelphia, Pa. Wm. M. Stubs, Manager.

STANDARD ELECTRIC CAR COMPANY'S Cleveland factory branch has been removed to Euclid Avenue and 21st Street; Fred L. Morgan, Manager.

GENERAL MOTORS TRUCK COMPANY has just completed service station costing $15,000 at Fort and Twelfth Streets, and Lafayette Boulevard, Detroit, Mich. The building contains 50,000 sq. ft. of floor space, with a capacity for storing about 200 cars.

BROWN COMMERCIAL CAR COMPANY, Peru, Ind., has established an office in Archey-Atkins Company's salesrooms, North Capitol Avenue, Indianapolis, Ind.

FINANCIAL AFFAIRS

CROXTON-KEETON MOTOR COMPANY, Massillon, O. The final account has been passed and the second dividend ordered, effecting a distribution of about $20,000.

GENERAL MOTORS COMPANY, Detroit, Mich., has closed down Elmore plant at Clyde, O., and it is reported that the machinery will be either moved or disposed of.

MAXWELL-BRISCOE MOTOR COMPANY, of New Castle, Ind., Frank E. Smith, manager, was appointed receiver for the company and instructed by the Superior Court to continue the business, and, if possible, to pilot the company through its difficulties.

MORGAN MOTOR TRUCK COMPANY, 677 Cambridge Street, Worcester, Mass., made a general assignment for the benefit of its creditors to Chas. H. Derby, of Paxton, of the law firm of Derby & Lincoln, who is clerk of the corporation and also its former president. The liabilities are $78,000 and the assets $15,000.

GENERAL MOTORS COMPANY, Detroit, Mich., has purchased for retirement $500,000 of the corporation's 6 per cent. sinking fund bonds. With this purchase, the Motors Company will have retired so far this year $1,500,000 of the sinking fund bonds. These bonds are part of an issue of $15,000,000, $3,000,000 of which have already been retired.

ATLAS MOTOR CAR COMPANY, Springfield, Mass. Although there are three more attachments filed against the company, Attorney Edward W. Beattie, who is acting for the company, announces that the prospects are rosy for a settlement of all financial troubles by a reorganization. If a reorganization is effected, it will mean that the plant will reopen with more men employed than have been in the past.

THE KNOX AUTOMOBILE COMPANY, of Springfield, Mass., well known builders of commercial cars and motor fire apparatus, made an assignment on September 28th to Edward O. Sutton, and Harry G. Fisk, of Springfield, for the benefit of the creditors. Lack of ready cash and reluctance of banks to advance money on automobile paper, are given as the immediate reasons; the assets are claimed to be over two million dollars and the liabilities, outside of capital stock, amount to about a million and a quarter. Business has continued without interruption, and it is understood that new orders are being booked as usual.

CONVENTIONS OF THE NEAR FUTURE

The list of conventions given below is to be published each month so that commercial car manufacturers can communicate with the proper authorities with the idea of arranging to give lectures, illustrated talks, statistics, etc., to show the advantage of motor trucks in these various lines, also possibly to show and demonstrate their cars.

October 15-17—Ohio Firemen's Association Convention, Youngstown, Ohio.
October 19-26—The International Dry Farming Congress, Lethbridge, Canada.
October 21-25—The Fifth Annual Convention of the Association of Railway Electrical Engineers of United States and Canada, Auditorium Hotel, Chicago, Ill.
October 22-24—Mississippi Valley Medical Assn., Hotel Sherman.
October 22-24—Annual Convention of Nebraska State Association of Bakers, Grand Island, Neb.
October 23-24—Convention of New York State Real Estate Dealers' Association at Binghamton, N. Y. Frank L. Danforth, Buffalo, President. John Shaw, Binghamton, Chairman of Committee.
October 24-25—Convention of State Veterinary Surgeons' Association, Dallas, Texas. Dr. F. R. Wingrove, of McGregor, is president, and Dr. E. R. Steinman, of Taylor, is secretary.
October 25-26—American Iron and Steel Institute Convention, Pittsburg, Pa. James A. Farrell, Chairman of Arrangements Committee.
October 28-30—National Poultry, Butter and Egg Association, Hotel Sherman, Chicago, Ill.
November 7—Farmers' National Congress, New Orleans, La.
November 11-12—Annual Convention of Missouri, Kansas & Oklahoma Hotel Men's Association, Kansas City, Mo.
November 12-15—American Society of Municipal Improvements Convention, Dallas, Tex. A. Prescott Folwell, Secretary, No. 50 Union Square, New York.
November 14—Convention of Nebraska Manufacturers, Omaha, Neb.
November 19-20—Kansas Agricultural and Industrial Congress, Convention Hall, Hutchinson, Kansas. John Lovett, Asst. Secretary
November 19-21—Michigan Retail Implement and Vehicle Dealers' Association, of which F. F. Witbeck, of Lansing, is Secretary, will convene in Saginaw, Mich. Sessions to be held in the Auditorium.
November 19-22—Minnesota Conservation and Agricultural Congress, Minneapolis, Minn.
November 21—Central Electric Railway Association Convention, Columbus, Ohio.
November 25-28—15th Annual Session of American Mining Congress, Spokane, Wash. J. F. Callbreath, Denver, Col., Secretary.
December 3-5—Oklahoma Hardware and Implement Association Convention, Oklahoma City, Okla. W. B. Porch, Secretary.
December 3-6—American Road Builders' Association Annual Convention, Music Hall, Cincinnati, O. E. L. Powers, 150 Nassau St., New York City, Secretary.
December 12-18—National Association of Cement Users' Annual Convention, Pittsburg, Pa. R. L. Humphrey, Harrison Bldg., Phila., Pa., is President.
January 9-11—Forty-ninth Annual Convention of the National Wool Growers' Association, Cheyenne, Wyo.
January 14-16—The Tri-State Grain Growers Association's next Annual Convention, Fargo, N. D.
February 18-20—Kentucky Retail Hardware and Stove Dealers' Association Convention, Galt House, Louisville, Ky. J. M. Stone, Sturgis, Ky., is Secretary.
February 20-28—Ohio State Retail Hardware Merchants' Association Convention, Sunday's Tabernacle, Columbus, O. J. Y. Bassell, Secretary Chamber of Commerce, is in charge of arrangements.

COMMERCIAL CAR AGENCIES WANTED BY:

P. E. Corkran, Easton, Maryland, wants line of trucks from small cars up to four or five-ton trucks; also, small capacity worm drive truck.

Nelson V. Porter, Norwich, Conn., wants trucks selling from $500 to $1500.

N. V. & H. N. Porter, of New London, Conn., want agency for cars listing from $500 to $1500.

Danley & Nason, Manhattan, Mont. This town has a population of 600, and it is said requires cars of 1500, 4000 and 10,000 lbs. capacity, of the gasoline type, and to be medium priced.

J. L. Paul, Gallitzin, Pa., agent for Great Western. This town has a population of 4500, and as stated, requires cars from 500 to 1000 lbs. capacity, of gasoline type, to sell for $500 to $1000.

Pacific Motors Company, distributors, 682 & 84 Washington Street, Portland, Ore. This city has a population of 675,000 and the company states it requires cars of 1 and 1½ tons capacity, of the gasoline type, to sell for $1800.

A. A. Hibbard, Thomas Building, Reno, Nev. The towns of Reno and Sparks have a population of 15,000, and it is stated require light capacity cars of the gasoline type to sell for $500 to $1000.

E. R. Boston, Cedarville, Cal. This town has a population of 500, and requires trucks from 1200 to 4000 lbs. capacities, to sell at $1000 to $2000.

Hill City Garage, Forest City, Ia. This city has a population of 2000, and requires cars of one-half, one and two-ton capacities, selling at $1500 or less, of the gasoline type.

Wedge Garage Company, of Zanesville, O. This city has a population of 28,000, and the company states could use cars of 1500 to 4000 lbs. capacity, of the gasoline type, to sell at $600 to $2000.

Dr. J. W. Hawkins, of Westbury House, Island of Barbados, British West Indies. Truck suitable for hauling sugar cane to be refined.

The Fruitvale Garage Company, 3420-26 E. 14th Street, Oakland, Cal. This city has a population of 30,000, and requires cars of all capacities of gasoline type.

The Miller Company, Room 4, Warden Building, Washington, D. C. Cars wanted of 1000, 1200 and 3000 lbs. capacities, selling at $700 and upwards.

C. W. Smith, Volga, S. Dak. Population about 700. Light to heavy gasoline cars are wanted ranging in price from $500 to $2000.

Stewart & Slocum, 317 W. Dominick Street, Rome, N. Y. Requires one-ton gasoline cars, selling at $1000 and up.

C. E. Jensen, Oldham, S. D. This town has a population of 700. Cars of two, four and five-passenger capacity are required, listing from $500 to $1000.

THE COMMERCIAL CAR JOURNAL

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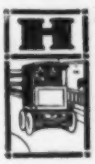
The 1912 Table of Specifications of Commercial Cars will be included in the regular subscription price of $2.00 per year for the Commercial Car Journal until the supply on hand is exhausted.

THE MOTOR-DRIVEN TRUCK, GREATEST CHAMPION OF GOOD ROADS



HISTORY repeats itself, it has been said, and this statement holds true with respect to all of the epoch-making inventions. The printing press, the railroad, the motor truck, each in its turn has been assailed. It is true that in recent times, the world, having become more and more enlightened, there is less of senseless antagonism exhibited toward labor-saving devices.

In spite of these facts, and our modern state of enlightenment, we find a prominent Highway Commissioner declaring before the American Roads Congress that the modern motor truck is a menace to good roads. Much of the opposition to the automobile has surely, if gradually, died out, and highway commissioners and road engineers of reputation have recognized the advent of a new era in transportation, and the necessity for meeting these new conditions by the construction of suitable highways. It is therefore with surprise that we find anyone voicing such sentiments as those expressed by the above mentioned Highway Commissioner.

In the earlier days automobile opposition came largely from the horse user, but as motor driven vehicles gradually invaded the commercial transportation field, there began to be murmurs from the railroad and steamship companies. These large interests are undoubtedly reading the handwriting on the wall, and feel already the inroads which the enormously increased use of trucks in the transportation field is making.

With the printing press there were those who objected to the spread of knowledge to the masses, who predicted revolutions and dire disaster if the common people were thus enlightened. Others objected because of the rapidity with which results could be obtained, and pointed to the hand illuminators who would be thrown out of employment. In the case of the railroad, the progress of humanity was to be stopped because the wool on the sheep's back was soiled by the soot from the engines. With motor driven vehicles, we still have those who object,—because some will be thrown out of employment, because of the rapidity and facility with which goods can be handled, and we have even the modern owner of sheep, the large interests whose wool will be soiled.

Taken in a broad sense, the statement of the commissioner is ridiculous. In isolated instances where roads are poorly or improperly built there may be some slight damage done. Instead of damaging the roads, the modern truck, with its wide flexible tires and its slow speed, positively improves the condition of roads which highway commissioners should blush to look upon, while roads which are fit for public traffic are not effected, even in wet weather to the same extent by trucks, as they are by the narrow iron tires of horse vehicles. The ordinary horse truck of less than three tons capacity has tires which very seldom exceed two inches; on the three to four ton horse trucks they are not over three inches in width, and on a few five-ton wagons there are four inch tires, but tires of this width are exceptional. Motor truck tires are as a rule, double on the rear wheels, and each of these tires is larger in proportion than on a horse truck of the same capacity. Twin five inch tires are often used on four ton machines, and twin six inch tires on five ton trucks. Here is a spread of ten and twelve inches as compared to four inches as a maximum on the horse truck. Our worthy highway commissioner says the truck is a menace to good roads, yet even when we stop to consider its actual effect on even inadequately constructed roads, we find that it cuts into them less than trucks of equal capacity drawn by horses, to say nothing of the damaging effect of the horses' shoes themselves, and especially of large draught animals when digging their hoofs into the surface for a strong pull.

A menace to good roads indeed! There has never before been raised up such a compellor of good roads as the modern motor truck. Any thinking man cannot but realize that the advent of motor transportation marks the beginning of universally good roads in and about the hauling districts of all closely populated centers. Once arouse the business man, and he will never rest until the muck-holes and impassible quagmires, so often called streets, have disappeared forever, to be replaced by real roadways, with surfaces suitable for the transportation of goods:—the motor truck has aroused him.

The roads and highways belong to the public, not to the corporations, and the public have already demanded the motor truck as the most serviceable and indispensable method of rapidly transporting its goods. In spite of the utterance of such vagaries even from men who are supposed to know whereof they speak, the commercial car will continue its forward movement, and with it, good roads,—roads such as the world has never before seen, will gradually stretch out their

binding tentacles uniting the large centers with their suburbs, and making a business unit of many a community which, with the slow and almost impossible horse methods of the past, has been nothing but a group of scattered hamlets. A menace to good roads; we hail the motor truck as the greatest champion of good roads that man has yet produced.

AN INTERESTING COMMUNICATION FROM A COMMERCIAL CAR USER

IN the September issue of The Commercial Car Journal appeared an editorial entitled "The Reason Why," in which is pointed out that actual cost records are extremely difficult to be obtained, and that users are, as a rule, prone to keep their experiences to themselves for various reasons, some thinking that it would be advantageous to competitors, and would give them the benefit of their experience; still others keep no records, and feel ashamed to admit the fact.

This article brought forth a communication from one user of commercial cars, in which he details his experience, the gist of which is that cost and figures of the other fellow's business don't amount to anything, but, that each business house must figure out for itself what the conditions and demands of the business are, and how much money can be saved and where the saving can be effected. His communication follows:

I read the article in your September issue, entitled "The Reason Why," and I can fully appreciate the position of the prospective auto truck purchaser.

He sees, on every hand, evidence of many others using trucks to an advantage. He sees the speed with which they travel, and he hears continually of large savings and is assured by salesmen that he too can save time and money by adopting the modern method of delivery; but what proof can he secure, or where can he go for a disinterested opinion? It is perfectly right that he should ask for facts and figures. The above mentioned article shows why he cannot get them.

We are like all the others, we do not want to tell; our costs and records are gathered at considerable expense, and being in business for profit, we feel that we are entitled to derive what benefit we can from them and keep it to ourselves, but if our experience is of any value we are glad to give a full and unreserved statement of how we found out, and why we replaced horses with autos.

We are a manufacturing concern located in an eastern city. When the question arose, some time ago, whether it would be advisable for us to replace our present delivery equipment of teams with power driven vehicles, I was entrusted with the commission to investigate and report on the following questions.

(1) Is our present system of delivery efficient?
(2) If not, would one or more trucks increase its efficiency?
(3) What type should we use, Electric or Gasoline?
(4) What make of truck should we buy?
(5) Details of the investment.

Before starting actual work, I sized up the problem from a distance and a remark I once heard an instructor make to a class of students in a lecture on life insurance, was recalled to me. It was as follows: "You know, or should know, what sort of policy is best adapted for yourself. All insurance is good, but not all insurance is good for you; first decide if you need insurance; next, study your own particular case, select the right policy and then go ahead. The kind of policy you select will show how much or how little you understand yourself."

Accordingly I determined to study our own delivery problem. We were operating six double teams and during the rush seasons we were forced to work drivers and horses late into the night, but we delivered the goods to our customers and apparently everything was serene. True, we were killing horses, but humanity was to be eliminated temporarily as a reason for buying trucks.

I carefully compounded a list of our actual expenditures, covering a period of three years. I included every item that could in any way be construed as cost of delivery. The resulting figure was the first step toward answering question number one. As I had no means of comparison I was obliged to accept it as normal.

I found that our teams were covering an exceptionally large area, and that on the majority of trips the major portion of the time was consumed on the road, not at the stops. If we could devise a scheme which would decrease the time between stops, it would of course increase the efficiency. It is evident that this could only be done in one of two ways, first, to have more stops within a given area or to increase the speed of the vehicle from stop to stop. The first way is in a manner beyond our control. True, a poor shipping clerk might cause a serious loss of time by ignorance or carelessness along this line. I found that in our line we could not better conditions any in this respect.

Take for example a large department store. Their wagons drive from the store two or three miles to a given section and remain within two or three blocks for an hour or more while a number of small parcels are delivered. In their case the major portion of time is consumed while the truck or wagon is standing still, while our teams frequently drive twenty-five or thirty miles with only one or two stops. The conclusion was, that a truck would be an advantage, at least on the longer runs.

Now to answer question number three. Assuming that one truck would do quicker, work of one team, the question arose, would it do the work of two teams or could we so arrange our work to allow the truck to work to its full capacity? I decided that in busy seasons at least one truck would replace two teams, but it must run fifty to sixty miles per day over uncertain roads.

We finally decided that a gasoline truck was best for us on account of mileage.

Question number four brought me face to face with a problem. I endeavored to book myself on the various makes of cars. Enthusiastic salesmen showed me all manner of trucks, each earnestly declaring his car the best for such and such a reason, while his competitor claimed his the best for reasons exactly the reverse.

I was whisked through the streets of our beautiful city, up hill and down dale, on demonstrators, the while being lectured by an earnest salesman who flung technical terms at me with such rapidity that I soon lost the drift of his remarks completely and settled down to enjoy the bracing air and fleeting landscape. Most of the time the weather was fine, and I hope the diversion caused by these rides was beneficial to my health. If not, then they failed to accomplish any good whatever, for when I was through I was so befuddled that I determined to start all over again, which I did.

I requested all the host of salesmen to allow me a month to recover my composure. I then went back to my original tactics—"To study our own conditions," first to determine the capacity of the truck we required. Our average load was bulky, but not heavy, and after considerable investigation, I determined that a 1 1-2 to 2-ton truck was what we wanted; thus, I eliminated all of the very large trucks; next, owing to the fact that our goods required a body of extra dimensions and as all makes could not carry a body the size we required, a great many more were eliminated. There were now left about six good trucks. I called these representatives in and asked them to tell me why and heard their replies to their competitor's arguments. It was now far easier to digest the details of six cars than it had been previously with sixteen. By this time I had things shaped in such a manner that the rest was only a matter of selection. I had six good makes before me, any one of which would fulfil our requirements. I decided on one of the six as being the best for our use. Next came the investment, which was, of course, very simple and of no interest. We bought one truck which has displaced three double teams. We have delivered our output and have saved money, actual money, over and above the instrinsic value of the advertising, but now we must stop, for even if we cared to state how much we saved we might deceive someone into thinking that he could do likewise, or that this article was written to advertise some particular make of truck—such is not the case.

If anyone is interested enough in the problem to consider the truck at all, he should try to forget what someone else saved or lost and get right down and "study his own conditions."

L. R. Dougherty,
H. D. Dougherty & Co., Philadelphia, Pa.

INFORMATION BUREAU

WHAT WOULD YOU LIKE TO KNOW? FREE SERVICE

There are many important questions about commercial cars, or their use or care, upon which we feel sure our readers would like to be more fully advised.

Write us stating fully what you want to know.

Address Information Bureau,

COMMERCIAL CAR JOURNAL, Market & 49th Sts., Phila., Pa.

PISTON CLEARANCE FOR AIR-COOLED MOTOR

[221] I would like some information on the subject of proper clearance between piston and cylinder of an air cooled engine. Has it been found necessary to have greater difference in diameters in an air cooled than in a water cooled, and what is the prevailing practice? How hot would the cylinders become before engine would begin to lose power? What has been found the best character of oil for air cooled cylinders, and is a larger amount than in water cooled found necessary?

GLENS FALLS, N. Y. C. M. MARSH.

The subject of proper piston clearance on air cooled motors is a very much debated question with engineers, and there is no such thing as standard practice in this regard. The few who have experimented along these lines believe that three one thousandths per inch diameter of bore at the top up to diameters of 4⅛ in. and for anything larger than this a 25 per cent. increase.

The prevailing practice in water cooled motors is to allow one one-thousandth per inch of bore.

It has been found that a temperature above 350 degrees Fahrenheit for the cylinder walls will result in loss of power.

Air cooled motors require more oil than the water cooled type, but just what kind of oil to use will have to be determined by experimenting.—Editor.

COMMUNICATION: MILEAGE TOO LARGE AND DEPRECIATION TOO SMALL

9 Marion Place, Forty-Fort, Pa., Oct. 2, 1912.

Dear Sir: In regard to the report, page 30 of the August C. C. J., on truck run to Bristol, I am of the opinion that the depreciation charge of $1.50 for a 42½ mile run is entirely inadequate. To begin with, an amortization charge reckoned by the day is, according to my way of thinking, all wrong. Does not a vehicle which runs 50 miles a day depreciate faster than one which runs 25 miles?

The only parts of a truck which depreciate by age are the tires, and 7500 miles per year seems to be the average run of truck from one to five tons, or 25 miles per day. The depreciation per mile run will then be the annual charge divided by 7500. If the truck in question makes its 42 miles twice a day and every working day, then 20 per cent. depreciation is not enough. If these parties are figuring only $3 a day for this item regardless of the miles traveled, they are certainly fooling themselves. Now as to the gasoline used. I question very much if any five-ton truck ever makes 7 miles to the gallon for the round trip. We have in this town (Wilkes-Barre) a line of auto 'busses. The machines are all Mack 1½ ton chasses. They never travel off good paved streets, and have perfectly level ground. While I do not know the exact figure, they are getting between 7 and 8 miles to the gallon.

If you will look on page 13 of COMMERCIAL CAR JOURNAL, August 15th, 1912, under Summary of Reports for Gasoline Trucks, you will notice that the second truck on this list gets about 3½ miles; figuring the first truck's gas at a mean between the second and third, he gets only 3.88 miles, the four-ton truck gets only 3 miles; while figuring the fourth and fifth at 13 cents they make only 1.27 and 1.19 miles per gallon respectively. Of course, I do not know whether these trucks were operating in level or hilly country, but I have been unable to get an authentic data showing 2½ to three-ton trucks operating in the country doing much better than 4 miles to the gallon. Our roads here are bad and the hills very steep, some of them going 20 per cent. for 500 to 600 ft. In New York City Francis H. Leggitt is getting 3.5 miles from his five-ton and 5¼ from his 2½-ton trucks. I would like to get more mileage, but doubt if I can in this country.

FORTY-FORT, PA. W. S. FANNING.

NOT SUFFICIENT DATA

This firm may be interested in the purchase of one commercial car, gasoline type, about two tons capacity. Condition of roads, gravel. Our delivery consists of about three routes of about ten miles each, and city delivery population about 6000.

Would like to know which is the best truck to suit our business. We do a wholesale and retail general merchandise.

PLAQUEMINE, LA. A. WILBERT'S SONS CO.

The above communication is very typical of what we are receiving daily from prospective users. This man is in the general merchandise business, which we know from the letterhead. He does not mention the weight and character of the loads to be carried, and whether all three routes have to be covered daily and at the same time, or whether they can be covered successively. Nothing is said about the number of stops that have to be made for loading or unloading, and the approximate time consumed in these operations. The number of teams now employed, and the method of handling the work at the present time is not touched upon. The character of the pavements in the city is important; gravel roads may indicate almost any kind of a road from good to bad.

It is impossible for us with such meagre information to give an answer which will really be valuable.

We publish this not only for the benefit of this inquirer, but for those who may inquire in the future.

We shall be very glad to hear further details from Charles E. Herbert, and can then give an intelligent answer.—Editor.

Third Annual Convention of the Electric Vehicle Association of America

N the 8th of October, in the Mechanics Building, Boston, Mass., the largest and most enthusiastic meeting yet held by the Electric Vehicle Association of America was opened by an able address by President W. H. Blood, Jr. In his address he called attention to the remarkable increase in membership of the Association of 70 per cent., there now being 335 members. The work of the Association namely,—promoting the adoption and use of electric vehicles is now receiving hearty support, and it is gratifying to note that through the co-operative efforts of the Association larger sales of electric vehicles have been brought about. The central station men have recognized the value of the "Off-Peak" charging business and are putting their shoulders to the wheel to increase sales.

The advantages of the electric were brought forcibly to the notice of the members and attention called to the handicap of the gasoline car makers by the ever increasing price of gasoline, while the cost for charging has decreased. He commended the work of the various committees and especially that of the Advertising and Publicity Committee, which has been handling a co-operative advertising scheme. The Papers Committee, Membership, Emblem, Insurance and Committee on Standardization were each commended in turn. During the past year the New England section and a Chicago branch of the Electric Vehicle Association of America have been organized. Chairman of the Convention Committee, E. S. Mansfield, was congratulated upon his successful work in connection with the Boston Convention.

The reports of the committees were read and discussed, particularly the work of the Publicity and Advertising Committee under Chairman Charles L. Edgar.

The co-operative advertising scheme which has been in successful operation during this past year, after considerable discussion, was recommended for use during the coming year. Lantern slides showed the various advertisements which have been used.

The New Officers

The election of officers on the first day resulted as follows: President, Arthur Williams, of the New York Edison Company; Vice-President, F. W. Smith, United Electric Light & Power Company, Inc. Harvey Robinson, of the New York Edison Company, was again elected as Secretary, and Day Baker, of the General Vehicle Company, New York, was made treasurer. The directors for the ensuing year are W. G. Bee, to fill out the unexpired term of Frank W. Dyer; W. H. Blood, Jr., E. S. Mansfield, G. H. Kelly and P. D. Wagoner.

At the close of the session on the last day a vote of appreciation and thanks was passed and spread on the minute in behalf of the untiring efforts and successful work of the retiring president, W. H. Blood, Jr. His resignation as president does not imply a cessation of his activity, for Mr. Blood will continue actively his work for the Association on the Board of Directors.

Papers

The Committee on Papers supplied many interesting ones which brought forth considerable discussion. The papers were as follows:

Where We Stand To-Day—C. R. Michel.

Street and Traffic Conditions as related to the Electric Vehicle—R. McAllister Lloyd.

The Electric Vehicle in Denver—Dr. M. Ekstromer.

The National Co-operative Advertising Campaign of the Electric Vehicle Association of America—Frank W. Smith.

Notes on the Cost of Motor Trucking—Dr. Harold Pender and H. F. Thomson.

Some Recent Developments in the Lead Battery for Electric Vehicles—Bruce Ford.

Conditions in the East and the Possibilities of the Electric Vehicle—Stephen G. Thompson.

Progress of Commercial Cars in America, with Special Reference to the Electric Truck—E. S. Foljambe.

Electric Vehicle Battery Charging Apparatus—R. E. Russell.

The Standardization of the Electric Vehicle—Alexander Churchward.

The Edison Storage Battery in Service—Harold H. Smith.

The Electric Vehicle from an Insurance Standpoint—Carl H. Clark.

Mr. Lloyd in his paper called attention to the fact that it is possible to increase the speed of electrics fully 50 per cent., but also called attention to the fact that this is not desirable and that he believes it advisable for the Association to give considerable time and attention to the weight and controlability of vehicles. He suggested that the society find ways of stimulating public interest in improved city streets and greater safeguards for the people. Streets should be provided with a surface suitable for motor vehicle purposes and not subject to frequent disturbance.

The Electric Vehicle as Employed in Denver, was well covered by Dr. M. Ekstromer and led to a discussion of a comparison of conditions in the East and West.

Some interesting statistics were detained in the paper, Notes on the Cost of Motor Trucking, by Professor Harold Pender and H. F. Thomson. The methods of keeping truck costs were discussed and the subjects of garage expense, sundries, driver and helper, amorpization or depreciation, interest, administration, insurance and total annual cost were taken up in detail.

Tables showing costs, the data being gathered from a large number of users, were given. Professors Pender and Thomson are conducting investigations for the Electrical Engineering Department of the Massachusetts Institute of Technology of Boston, with funds appropriated for the purpose by the Edison Electric Illuminating Company of Boston. This work covers New York, Chicago, Boston, Philadelphia, Washington, St. Louis, Detroit and a number of smaller cities in that territory.

Mr. Bruce Ford, in a short paper, touched upon recent developments in lead batteries, which have prolonged the life of the positive plates, and also outlined the method of obtaining low resistance connectors by means of strap-like connections with cast lead alloy heads for embracing and "burning" to the pillar terminals. The copper and alloy are now welded together, providing good contacts at all temperatures. An improvement was also pointed out in the wood separators, consisting of the use of a wood which resists the electrolyte and with the grain running in a horizontal direction which prevents splitting.

Mr. Stephen G. Thompson's paper on Conditions in the East and the Possibilities of the Electric Vehicle brought out the fact that the bulk of the electric vehicle business must remain in the densely populated sections, California being the only western territory demanding a large supply, most of the cars going to New York, Pennsylvania, Illinois, Massachusetts, Ohio, Michigan and New Jersey. These states have a population of nearly 40,000,000. He therefore points to the East as the future field for the electric and cites New Jersey as indicative of the general trend. He is most optimistic in regard to the electric commercial car and points with pride to the large percentage of the total number of power wagons employed, represented by the electric vehicles now in use, and that these are practically the product of only ten active vehicle makers. In conclusion his paper called for three cheers for the electric vehicle, which were heartily given by the members present.

In his paper, Progress of Commercial Cars in America with Special Reference to the Electric Truck, Mr. Foljambe gave some of the reasons for the phenomenal growth of the automobile industry, together with statistics as to the number of vehicles in use from 1908 to the present, and estimates that the production of trucks will exceed 40,000 during the coming year, more than doubling in one year the total number of trucks in use. He also called the attention of the makers to the coincidence between the periods in which there was lack of progress and those during which there was also a lack of advertising on the part of the electric vehicle makers. The long life of the electric, its advantages and many examples of its performance in actual service were given, together with tests showing the draw bar pulls, of a four wheel drive truck and also several tables of cost of operation.

Electric Battery Charging Apparatus was discussed in the paper by Robert E. Russel, and many forms of charging apparatus were illustrated and their points of superiority brought out. A comparison of the Mercury arc rectifier and the motor generator were given. The needs and best equipment for the private garage and for the public garage were taken up in detail, and also the best arrangements for handling the different kind of current and the apparatus to be used with 110 to 125, 220 to 250 or 500 to 600 volts D. C. In garages where both A. C. and D. C. are to be had it was suggested that the rates per kil-o-watt hour decide which supply is best to adopt. The "Multi-Volt" system of charging, and the best method of charging Edison storage batteries, were touched upon.

The Electric Vehicle from an Insurance Standpoint, by Carl H. Clark, pointed out several important features which should receive consideration at the hands of the manufacturer, such as better wiring, placing of the serial number where it cannot be defaced, etc. The practice of stamping the number into the steel frame in a definite location was recommended. The causes of fires were enumerated. The discussion brought out several methods as used by various makers of guarding against cars being left with the brakes on or against a curb, with the current on, which has been the cause of many fires. The novel suggestion was made by Mr. Blood that perhaps the control lever could be interconnected with the seat so that it could not be left in after the driver's weight was off the seat. Accidently throwing the lever into reverse it was suggested could be guarded against by providing a pawl or latch such as fitted to selective type transmission on gas cars.

Mr. Harold H. Smith's paper, The Edison Storage Battery in Service, gave an exhaustive outline of the best method of charging, boosting, etc., in connection with Edison batteries. He pointed out the action of the battery on short circuiting and a discharge curve was shown of a battery which was short circuited seven times during a period of two hours. The effect of standing and of high and low temperature was also shown, as well as the performance of several batteries which had an unusual record.

Mr. Alexander Churchward almost arrived too late to read his paper on the Standardization of the Electric Vehicle, but made a spectacular entrance at the eleventh hour and the members were rewarded after the slight delay by hearing a most interesting discourse and seeing curves resulting from several interesting tests on the effect of tires on mileage, the effect of inflation on the tractive effort required, and the manner in which the axle is raised with different tires when encountering obstructions. A novel recording device which was used in some of the tests on tractive effort as compared to the speed was shown. An interesting curve showing a comparative tractive effort of a horse and electric truck was also shown.

At the close he advocated the adoption of the charging plug recommended by the Standardization Committee and same being embodied in a motion was passed.

The Edi-Swan electric lamp base was also adopted as the standard of the Association.

THE UNIVERSAL TRUCK COMPANY'S TROUBLES

The Universal Truck Company, of New York, is a separate and distinct corporation not in any way affiliated with the Michigan corporation, except as a selling agency for Universal trucks, for which purpose it was organized, is the statement of F. K. Parke, vice-president of the company. The use of the Universal name has caused much embarrassment, and for these reasons the selling arrangement with the New York Company has been annuled and the New York Company will probably be dissolved by the voluntary action of its stockholders or by receivership proceedings. From now on the Universal business will be conducted in New York as a Factory Branch of the Universal Motor Truck Company of Detroit at the new Service Station, display rooms and offices, 146-148-150 W. 63rd Street.

MYER ABRAMS COMPANY, Boston, Mass., has had an order for three 3-ton and one 5-ton Lauth-Juergens trucks placed by the People's Express Company, which operates motor trucks along the north shore of Massachusetts.

Efficiency of the Motor Fire Engine

The fortieth annual convention of the International Association of Fire Engines, which was held at Denver, Colo., September 17th to 20th inclusive, so far as the display of automobile fire engines is concerned, did not compare favorably with the convention held a year ago at Milwaukee. The fact that by far the greater portion of fire fighting apparatus is manufactured in the East and Denver being in the middle West, necessitating long hauls with heavy costs, influenced a number of manufacturers to the detriment of the display.

Another reason for the apparent lack of interest on the part of the manufacturers in displaying their wares is the fact that the automobile fire fighting apparatus has become such a demonstrated success that orders have been received far in excess of the manufacturers' ability to turn out the engines. Most of the concerns are months behind in their orders. One instance was given at the recent exhibition where two apparatus of a leading make were shown—a ladder truck and a combination pumping and hose car—which had been sold to Flint, Mich., the orders for which were given prior to June 1st. The cars were being shown just previous to their delivery to the municipality.

In the pumping tests many noteworthy features were brought out which should prove of interest and vast importance to municipalities and their chiefs. Whatever doubt may have been entertained as to the efficiency of the automobile fire fighting apparatus should be dispelled after reading the results of the tests made this year and a year ago or previous.

The tests demonstrated that all makes have made many improvements since a year ago, the most noteworthy of which seem to be in the cylinders, viz.: the diameter of bore and length of stroke. The improvement gives increased efficiency in pumping.

The following comparisons are given in the results of last year's and this year's tests:

NAME OF ENGINE	HORSE POWER		RATED PUMP CARS AT 120 LBS		KIND OF PUMP	ENGINE CYLINDERS					PUMP PRESSURE POUNDS		GALLONS DISCHARGED PER MINUTE	
							1911		1912					
	1911	1912	1911	1912		NO.	BORE	STROKE	BORE	STROKE	1911	1912	1911	1912
AMERICAN LAFRANCE	200	121.6	900	900	ROTARY	6	5¼"	6"	6¼"	6¼"	119	135	645	898
ARENS - FOX	72	72.6	500	600	RECIPROCATING DUPLEX	6	5½"	6½"	5½"	6½"	120	120	340	540
ROBINSON	72	93.6	700	900		6	5½"	6½"	6¼"	6¾"	103	125	662	918
WEBB	80	86.4	600	800	ROTARY	6	5½"	5½"	6"	7"	115	130	630	838
GORHAM-SEAGRAVE		144		1000	3 — STAGE CENTRIFUGAL	6			7¾"	9"		137		975

The table shows conclusively that with the improvements in the design of the engines, those with same or even less horse power are enabled to throw a great volume of water in a given period, which is the prime object in the fighting of a fire.

In the run tests the automobile apparatus of all sorts proved again that they could cover a distance of ten city blocks in from a fourth to a third quicker time than the horse-drawn apparatus. And as the distance increased the advantage gained rapidly in favor of the automobile.

There were a few apparatus shown this year that were not shown at last year's convention, among which was a pumping engine built by the Gorham-Seagraves Company, which is worthy of mention. It was not a beautiful thing to look upon and would not create the same impression upon those seeing it go down the street as would the engine with half a ton of highly polished brass upon it. But for power and fire fighting ability it proved at the tests its efficiency. It is included in the table simply to show what the fire fighting apparatus is being developed into.

The annual conventions of the fire engines are bringing out many important features each year, but likely the most important to those who have the prevention of fires in mind, is the fact that the conventions are showing the very rapid advancement being made in the development of the fire-fighting automobile apparatus and proving that the horse is doomed to be banished from the city fire departments just as completely as he has been relegated from the pulling of street cars.

PACKARD RECEIVED LARGE ORDER

Wells Fargo & Company recently placed an order for one hundred motor trucks of two-ton and three-ton capacities with the Packard Motor Car Company, Detroit, Mich. These trucks, costing $286,750, will be used to supplant the Express Company's horse-drawn wagons in the large cities of the United States. The contract between the Express Company and the Packard Motor Car Company calls for the delivery of the trucks within a year.

FEDERAL TRUCK INVADES ALASKA

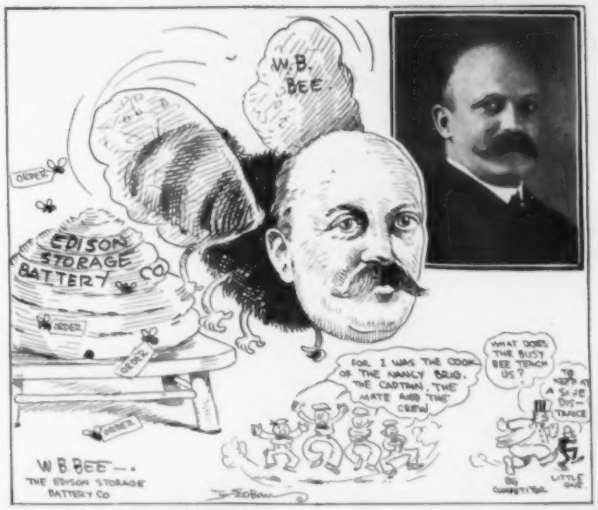
The Consolidated Development Company, of Nome, the largest ore mining corporation in Alaska, has recently placed an order with the Standard Motor Car Company, Federal agents in San Francisco, for three Federal trucks, which they will use to haul ore from their mines among the mountains to the export stations along the coast.

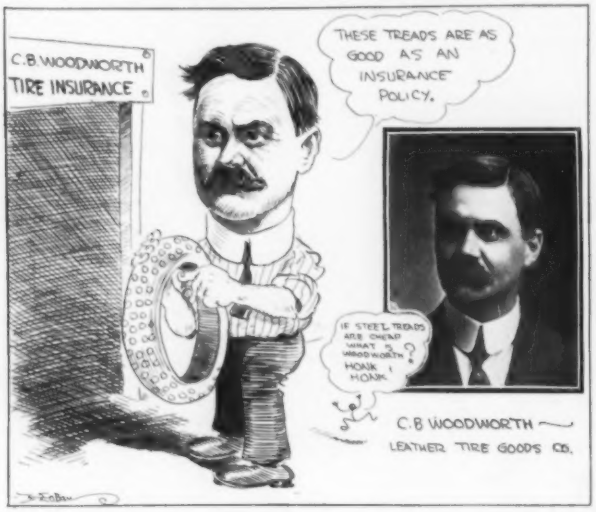
G. M. C. SECURES A GOOD MANILA ORDER

J. G. White and Company, of Manila, P. I., operating the Manila Railway, Light and Power Company, have placed an order for ten G. M. C. electric commercial cars, ranging from 1000 lbs. to five tons capacity. This order, it is stated, was secured on the basis of engineering merit.

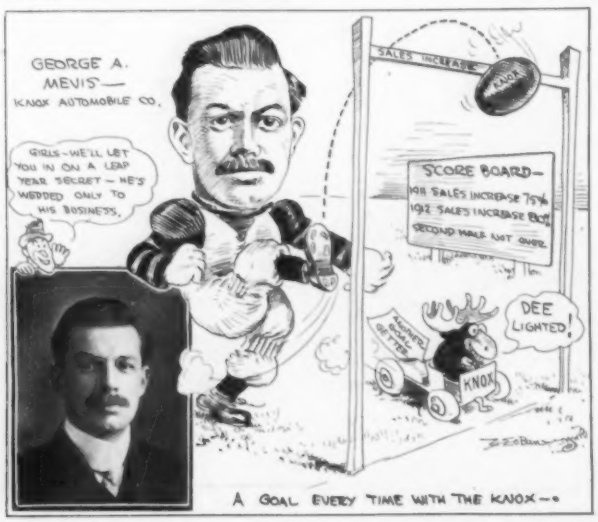
No. 1. Arens-Fox Model "A" Pumping Engine and Hose Carrier. No. 2. Arens-Fox Steam-Electric "Continental" Engine. Motors are rigid on front axles and encased in front wheels; driven by storage batteries. No. 3. American La France Aerial Motor Truck. No. 4. American La France Type 15 Pumping Engine and Hose Carrier. Also carries four fourteen-foot ladders. No. 5. Webb Pumping Engine and Hose Carrier. No. 6. Scene at the Tests. The Webb Throwing a 3¼ Inch Stream. No. 7. Gorham-Seagrave Pumping Engine. Equipped with temporary hood over pump at rear of car.

C C J GALLERY of SALES MANAGERS





ONE OF THE FATHERS OF THE INFANT INDUSTRY.
IT'S A PLEASURE TO WORK FOR THIS KIND OF A PRODUCT
PACKARD TRUCK
H.H. HILLS — PACKARD MOTOR CAR CO.
GASOLINE
"ASK A MAN WHO OWNS ONE"


GEORGE A. MEVIS —
KNOX AUTOMOBILE CO.
GIRLS — WE'LL LET YOU IN ON A LEAP YEAR SECRET — HE'S WEDDED ONLY TO HIS BUSINESS.
SALES INCREASE
KNOX
SCORE BOARD —
1911 SALES INCREASE 75%
1912 SALES INCREASE ???
SECOND HALF NOT OVER.
DEE LIGHTED!
KNOX
A GOAL EVERY TIME WITH THE KNOX —

GREATEST SHOW ON EARTH FOR THE BUYER.
"ALL THAT THE NAME IMPLIES"
PEERLESS
GREATEST ON EARTH — CARRIES ANYTHING FROM FEATHERS TO PIG IRON
FEEDS ONLY ON OIL AND GASOLINE.
BUYERS
P.J. SCHMUNK — PEERLESS MOTOR CAR CO.

TROLLEY COMPANY USES FEDERAL TRUCK

The Detroit United Railway recently installed a one ton Federal truck which is kept at a downtown station for use in case of fires. When a big fire is likely to tie up the system, the truck hustles to the scene with rail jumpers or supplementary rails which are placed on the regular tracks. The fire hose is bridged by these jumpers and the cars may proceed without delay. While the car is at the station the rail jumpers are contained in a basket made of wrought iron pipes and chains and suspended above the body by means of an air hoist. Two heavy chains are used to bear part of the load. When there is an alarm of fire the rails are lowered to the body and the truck is soon at the scene. Air for the hoist is supplied from the station compressor.

Air Hoist Loads Truck

This Federal truck is loaded with rail jumpers or supplementary rails, by means of an air hoist, which holds the load suspended in air, ready for depositing. This permits of quick loading, and consequently a rapid get-away.

TRUCKS FOR HAULING PIANOS

Considerable care and attention is always required in the delivery of furniture and other similar articles which are easily damaged or scratched by rough handling. Especially is this true of pianos and exceptional care must be taken to have them delivered in perfect condition.

Any wagon or truck that is to be used for this purpose must possess extremely easy riding qualities. Freight of this character should not get the full effect of the bumps and jars in going over rough places. In the building of trucks for this service much attention must be given to the design of the springs and spring hangers. They should be neither too stiff so as to make the truck ride hard nor too flexible to allow the load to rebound suddenly.

With the introduction of the motor truck considerable doubt was expressed by piano dealers regarding its practicability for this work. It was claimed that the motor trucks did not possess the easy riding qualities of the horse drawn trucks. In spite of all these claims which later experience has shown were without foundation, some of the earlier Gramm trucks were sold to piano dealers. Practically all of these are still in service, and others have been ordered by the owners. C. E. B. Adams of Adams and Engs, of Chicago, say that 90 per cent. of the pianos now delivered in Chicago are being hauled on trucks. This shows how largely the truck has replaced the horse and wagon for piano delivery in Chicago, and these conditions may be said to be approximately true for all the larger cities of the country.

LEHIGH R. R. HANDCARS REPLACED BY MOTOR-DRIVEN CARS

The adoption of motor cars for track work, in place of the old-fashioned man-power hand cars, has been decided upon by the management of the Lehigh Valley Railroad. Forty-seven of the new cars, the first installment, have been ordered, and the substitution of gasoline for muscle, for transporting repairmen and tools over the line, will eventually be applied to the whole Lehigh Valley system.

Under the old plan the men in a section gang necessarily use up much of their energy in pumping the handcar. Under the new one the energy will be saved for the real work of keeping the track in perfect order.

Not only this, but a considerable saving in time will be effected. The section men can get to their work earlier and stay at it later, now that less of the working day is consumed in carrying them from place to place. The motor car of the type selected travels at a speed of from 4 to 20 miles an hour, and is so light that three men can easily lift it from the track to let a train pass by. It seats 7 men comfortably, and its motor is built to transport as many men and implements as the car will hold.

The decision to equip the whole line with these cars was made after thorough tests on three or four sections. The speed of the cars would make it possible, if this were desired, to lengthen the track sections, and thereby use fewer gangs of trackmen to do the same work as now. But that is not the object of the present move. The company officials report that the great usefulness of the motor handcars is to be found in the added efficiency of labor—in the nearer approach to the absolute perfection in maintenance of way that is the aim of every up-to-date railroad management.

DOES ALL THE WORK

A three-ton, four-cylinder gasoline truck does all the trucking of Hamilton Carhart, cotton mill operator at Detroit, Mich. No attempt is made to keep a record of cost and the like. The business of the concern varies with the seasons and hauls to and from freight stations are fairly short.

Truck in Service of Hamilton Carhart

The average day is about 30 miles, average load about three tons. The car has been in use two years and as it is frequently thoroughly gone over, is in good condition.

DRIVES WINDLASS FROM JACK SHAFT

The accompanying illustrations show winch application in a two-ton Universal truck. The winch proper is located forward within the body of the car and is operated by the jack shaft through chain and sprockets. At the outer end of the jack shaft is the winch driving sprocket which ordinarily runs idle on a loose bushing. A sleeve is provided to engage the road sprocket or the windlass sprocket, that is, a clutch is used to operate either of the two. When it is desired to operate the windlass the jack shaft road sprocket is disconnected from the shaft by means of the clutch and the windlass member thrown in. With this system there is the full transmission and motor range which obviously would prove very useful in taking on heavy loads and reducing the time of loading.

THE G M C IN SERVICE OF ACME WHITE-LEAD AND COLOR WORKS

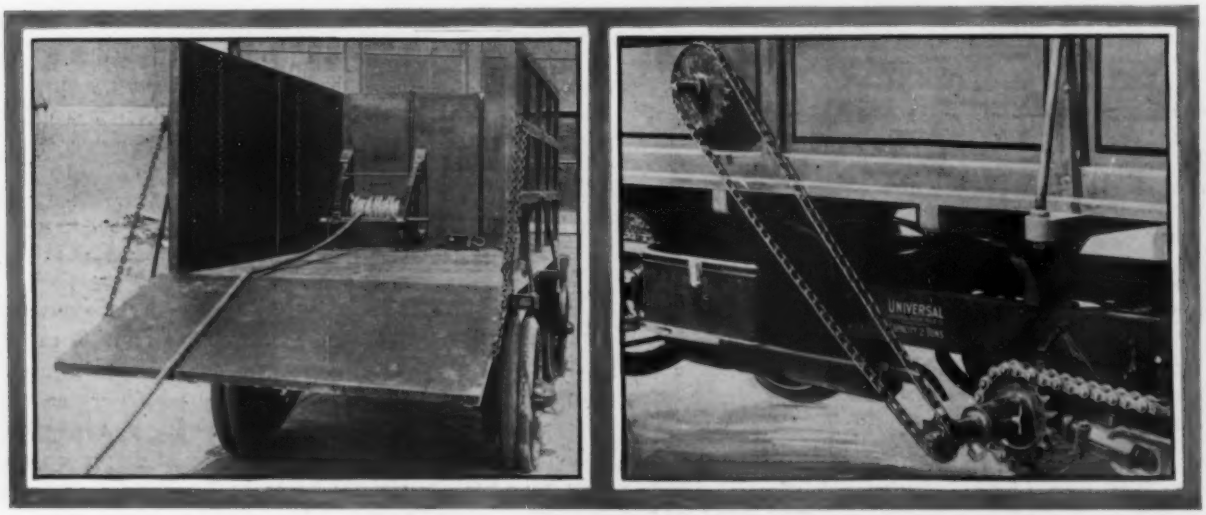
One thing which has particularly impressed the Acme White Lead and Color Works, is the fact that every motor truck they have purchased has been cheaper to operate than trucks purchased previously, which all goes to prove the great strides made in motor truck manufacture.

The largest truck in their service is a 5 ton Model K, manufactured by the General Motors Truck Company. A strict account has been kept of the performance of this truck and the advantages of the motor truck. This particular "G M C" truck took the place of two teams and two men, but for one month through their busiest season they checked up and made an accurate comparison between the truck and the two teams as outlined above. The results were as follows:

The Two Teams		The G M C Five-Ton Truck	
Tonnage	250	Tonnage	780
Mileage	1144	Mileage	1430
Total Expense	$229.16	Total Expense	$152.10

Item of expense in the above includes salaries, gasoline and oil, feed for horses, etc.

As far as depreciation is concerned they can not quite see how any truck user could very well answer this question and at the same time feel that it could be taken as a guide for anyone purchasing a truck. As far as the matter of bookkeeping is concerned they make it a point to charge off 20 per cent. as depreciation every year. However, they are thoroughly convinced the actual life of the up-to-date trucks, which they have in their fleet, will be approximately 150,000 miles, which means that the truck can be run economically an average of twelve years, even in their business where they work a truck for all there is to it, but at the same time make it the practice to see that the truck is properly taken care of.



Universal Power Winch

These illustrations plainly show the operation of the power windlass. The chain from the jack-shaft sprocket drives the windlass gear. The mechanism on the interior of the body is shown, with rope wound on drum for pulling on load

Test Hydraulic Truck With Trailer on Ten Per Cent Grade

The above photo was made during a demonstration test by the Hydraulic Truck Sales Company, New York, of a hydraulic truck on a grade ranging from eight to ten per cent. The truck, which weighs empty four and a half tons, carried a load of six tons. The trailer, weighing four tons, carried a load of six and a half tons, making a net load of twelve and a half tons and a gross load of twenty-one tons, which was easily handled on this cobblestone hill.

EFFICIENCY OF KISSEL TRUCK IN HANDLING ICE

By Our Western Correspondent

Kane and Trainor, the leading ice dealers of Sacramento, Cal., said: "Since we have introduced the motor truck into our delivery business, we have disposed of twenty-seven head of horses and twelve wagons." They have had a four ton Kissel truck in active service since last November and have just added two more of the same make and capacity to handle their largely increased business.

Saves Three Haulings

Under the old system it was necessary to handle the ice three times in getting it to the customer. This company gets its ice from a large brewing company and the two plants are three miles apart. The former method was to load a railway car with the ice and then transport it to the ice company's plant and then reload it into the wagons for distribution. Now the trucks load and handle their territory direct in addition to providing a supply at the company's plant for distribution by wagons for the short hauls. Ice depreciates heavily in quantity in handling and this reduction in the handling has effected a wonderful saving. It used to cost as high as thirty dollars a car to handle it under the old method, not counting the resultant shrinkage.

TRAILER IS USEFUL

Gilbert E. Tatreau, Highland Park, Mich., uses a trailer with his Cadillac touring car as shown herewith and says it is very useful, makes him boss of his own delivery and hauling system and frequently turns him a revenue as well. He got the idea from seeing another car similarly equipped and so he bought a pair of steel tired wood wheels, but these did not work out successfully. He then purchased the rear axle and part of the frame of an old Cadillac car fitted with 32 x 3 1-2 in. pneumatic tires. The rear axle trailer is still fitted with the differential so he can easily turn corners. The box is made of 1¼ in. plank and is 10 x 4 ft. and will carry a ton. As Gilbert is a plumber his loads are frequently heavy. His average per day is about 50 miles and as for cost, he says it is light. The draw bar is a 1 1-2 in. pipe, pinned to a steel cross bar under the frame.

Pleasure Car With Trailer

This view shows a trailer attached to a pleasure car, thus used in the service of a plumber. When detached the car is used for errands into the city

Kissel Truck Used by Ice Company

A FEW HELPFUL HINTS

Repairing Pneumatic Tires

Very often the pneumatic tire shoes on light delivery wagons are so badly damaged by cuts or blowouts as to be returned by the tire repair shops as being hopelessly ruined. In such cases, take a section of an old "shoe" somewhat larger than the hole or cut and rivet it to the under side of the damaged shoe with copper rivets. Such repairs will give a "passed up" casing a very long life and materially help to keep down tire bills.

Proper Method of Loading Motor Trucks

Teamsters are in the habit of placing their load on the rear end of a horse drawn vehicle unless there is sufficient to completely fill the truck. This method is said to make it easier for the horses, but in the case of the motor truck this method of loading should always be reversed, placing as much of the load as far forward as possible. By following this plan the weight is more evenly distributed over the four wheels, greatly reducing tire expense without in the least increasing the difficulty of steering the truck.

Starting a Cold Motor

Very often during the cold weather, particularly early in the morning, much time is spent in cranking and other ways to induce a motor to start. To overcome this trouble, a mixture of from 25 to 33 per cent. ether to the remaining portion of gasoline placed in an oil or squirt can, having a screen cap so as to make same air tight, will prove a wonderful help when used as a priming mixture.

Freezing Radiators

Much has appeared in the columns of this publication on this subject with various formula for preparing solutions to add to water in the radiator to prevent freezing, but it does not seem to be thoroughly understood that such anti-freezing solutions must be constantly replenished, as those generally used depend to a large extent on alcohol which evaporates very rapidly, especially under the influence of heat from the cylinders. Often it will be found necessary to add to the solution every other day. Where it is made the practice to drain off the water in the circulation system every night, it is not advisable to depend entirely upon the drain cocks in the radiator, for often after this has been emptied, some water still remains in the water jacket or pump.

To be on the safe side, remove the plugs in the lower side of the cylinder water jackets and after all water has escaped from these as well as the radiator, start the motor and run it for a moment, as you will thereby free the pipes and pump. Many a gear on the pump shaft has been stripped owing to the freezing of water in the pump, preventing it from operating when the motor is started.

Lubricating Springs

In order that the full action of the truck springs may be secured, it is advisable that every little while the body of the vehicle be jacked up, allowing the springs to expand to their fullest. In this position there will be noticed a slight separation between the separated leaves, particularly at the ends. Take an oil can and squirt oil into each opening, allowing a small amount of time for the oil to completely filter between the leaves before permitting the weight of the body and chassis to again settle upon them.

C. S. STONE.

SKID CHAINS OR TIRE GRIPS IN WINTER

With the first fall of snow, two points for consideration are brought to light while watching self-propelled vehicles.

First, that the owners are, to a large extent, caught unprepared, and some delay is experienced while proper drivers, to furnish traction, are being procured.

Second, that even the experienced seem to overlook the action of differential gears and apply skid chains or tire grips to one wheel only.

Every machine should include in its tool equipment during the winter season a substantial set of grips, to furnish traction to the driving wheels when streets are covered with snow and ice. These should not, however, be allowed to remain on the wheels any longer than absolutely necessary, as they are subjected to great wear and, in turn, the best of them do no good to tires.

In using grips, it is imperative that they be attached to both driving wheels, even though the machine be provided with a differential lock, the constant use of the latter does the truck harm and the use of grips on one wheel only is of no more use than none at all, as the wheel equipped with chains will meet with enough resistance to remain stationary, allowing the other to spin. Special care should be exercised to allow the clutch to drop in very slowly when starting, and, at the same time, throttle the motor as far as possible. This will reduce the liability of spinning the wheels, the usual careless practice of truck drivers. Newspaper, rags, or burlap, if placed directly in front of the rear wheels, will often start a truck in soft snow where traction seems impossible.

Peculiar Tire Wear

Wear of commercial car tires becomes manifest in various ways and some of them are interesting. Some tires will give at the base and pull away, others will wear rapidly on the tread and others will pit or break. Shown herewith are the left rear dual tires used on a five-ton gasoline truck which show peculiar wear. That is to say, pieces of the tread from eight inches to a foot long have been torn from the body of the tire, leaving deep depressions. It is said that this particular species of tire deterioration is due to improper curing. The defect was made good by the makers and though the tires, both sides, show the same sort of wear the owner of the truck has not yet had them removed. They are still serviceable he states.

Commercial Cars Especially Adapted For Hardware and Heavy Hauling

Examples of Such Service in New York and Philadelphia

BY E. S. FOLJAMBE

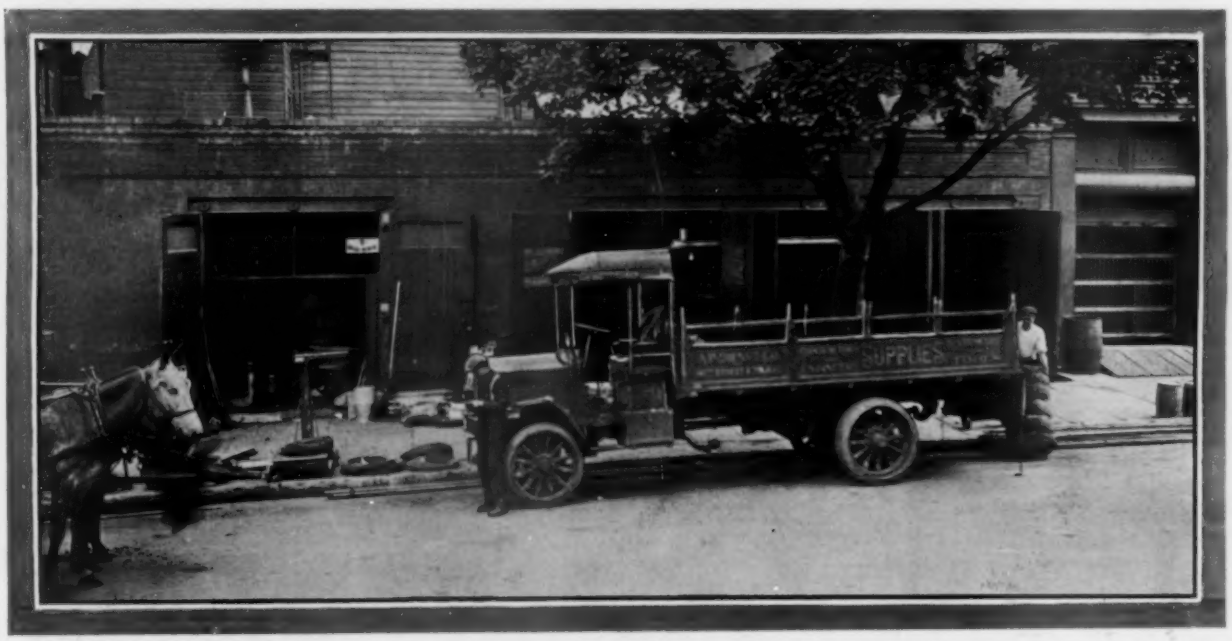
THE advantages of commercial cars are evidently appreciated by hardware dealers and plumbers, and those handling heavy materials. It is a matter of common note that even the retail plumbers are employing light commercial cars, or even converted out-of-date touring cars for their work, while the wholesale hardware and plumbing houses are using large trucks to advantage.

One of the pioneer wholesale plumbing houses in the use of trucks is that of John Simmons Company, No: 110 Center Street, New York City. For years this company has successfully operated motor trucks, replacing the old machines with new as fast as required. Their Knox trucks have just been replaced by a new 3-ton Knox, a 4½-ton Commer, and a 1500-lb. Velie on Motz tires, for quick delivery work. A 3-ton Velie is also on order. After ten years' experience with motor trucks they are still putting on new machines, and say they cannot and would not think of doing without them.

The early experiences of this company were with G. V. electrics, which were used on long hauls. With these vehicles the firm established a reputation for quick delivery, as compared with horse service, and this reputation still stays with them. The long hauls were to Jamaica, Long Island, Yonkers, and in all directions from the store on Centre Street to points within a radius of 30 miles.

The work of these machines is not in competition with horses, but with the railroad, and the statement was made that the goods reached the customers so quickly that many buy direct of the John Simmons Company, New York City, as they would get the goods the same day, who would otherwise purchase of a local dealer, if they had to wait until the second day for the goods, and had to go with their own teams to a freight house for the goods. By trucks, of course, deliveries are made direct to their stores, and no charge is made for this service. Mr. McDermott, who is in charge of the delivery service, said that the machines were very much better for their work than either the horses or railroad, and their superiority was shown especially in the hot weather.

Another large New York plumbing house has been using a 3-ton Hewitt since May 10th, with very satisfactory results. As in other instances, this truck covers long distances, hauling goods from the warehouse, which is 9 miles from the store, and delivering to Long Island railroad in Long Island City, also to Bath Beach, Coney Island, etc. Horses were hired from an outside teamster for these trips before the truck was put in service, and there was considerable dissatisfaction as the team, even starting early in the morning, could not get back until 2 o'clock the next morning, and the goods were often delivered after dark on the job where buildings were being put up, when there was no one there to sign for them. After such a trip the horses were always jaded, and fresh ones had to be used, or they did not show up until after 10 o'clock the next day. With the truck, deliveries are always made before dark and receipts given for the goods. The driver looks after the truck, making



Dienst's Packard Truck, which carries goods formerly hauled by railroad. This view shows the truck being loaded for one of its long runs to White Plains. Quickness of delivery is the feature of advantage to this wholesale and retail heavy hardware company

all necessary minor repairs. He receives $18 per week, and hires any necessary help for special lifting. The car is garaged in the company's own brick building, which is 80 x 100 ft., and fitted with all the necessary appliances, underground tanks, etc.

When asked if they ever overloaded the truck, the delivery superintendent said, "One noon the 3-ton truck stood in front of the store here. As a matter of curiosity, I obtained receipts for the items making up the load, and figured them out, and found that the driver had 7800 pounds on, and had already made two deliveries of heavy pieces. I cautioned him, and told him hereafter to watch carefully, and see that he did not give the truck such an overload."

Depreciation is charged off at the rate of 33 1-3 per cent., figuring off the entire cost of the truck in three years, but the owners said that, of course, the truck will be in use for many years after it has all been figured off. The cost of operation could not be obtained in any detail, but the statement was made that the truck cost less than $13 per day, including everything. Daily report slips are kept, showing to whom the goods are shipped and the order number. The warehouse man had been instructed to make an estimate of how many horses and wagons would be required to do the same work, and this estimate is placed on the slip. The following is a sample day's report, which is not by any means the largest amount of work done, but a very average one.

Daily Slip

Order No.	Name of Firm.	Cost of Truck.
2183	Sinnott	$3.00
2185	Sinnott	3.00
2305	Simpson	....
2304	Simpson	....
2797	Simpson	2.50
2802	Simpson	....
2311	White	4.50
		$13.00

This would have required two teams costing $7.50 apiece per day, or $15. The cost in the right hand column for the truck is based on $13 a day, average, and this is acknowledged to be rather high, so that the saving for that day was probably something over $2.

Cost Figures

The following figures are given for the cost of operation, covering a period of 11 months on the 3-ton Hewitt, from February 1st to December 31st, 1911, the figures including insurance, depreciation, driver, etc., amounts to $2,114.88. The cost of operation from April 21st to November 18th is as follows:

Maintenance, insurance, tires, etc.	$1,372.77
Depreciation, overhauling, etc.	450.00
Total	$1,822.77
Estimate for horses	1,827.50

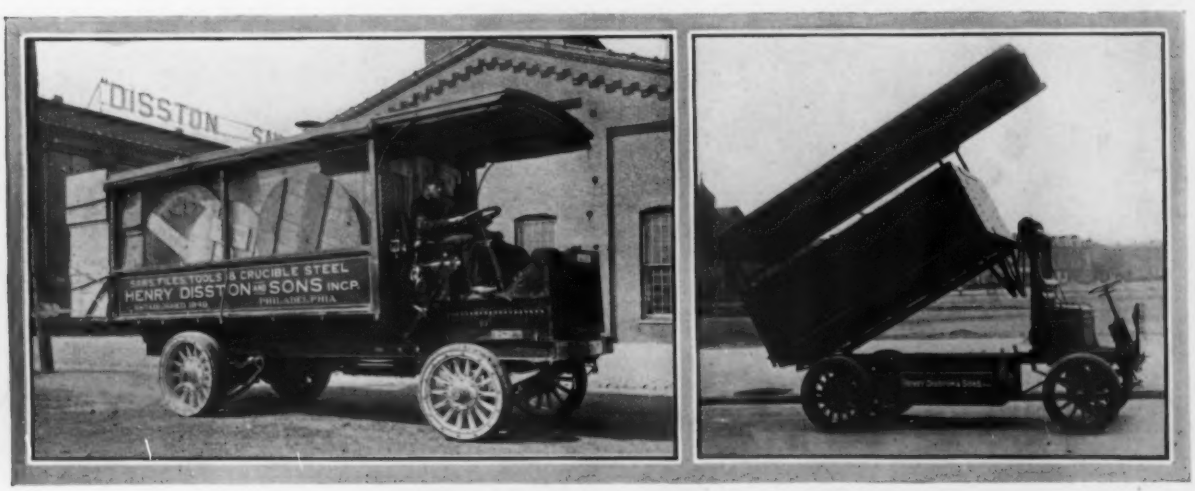
This shows for this period only a small gain, but it should be noted that these figures are increased due to an accident in which the truck got into a mudhole and broke the frame, and some other damage was done, $300 being expended for overhauling, but even including this accident, a saving was still shown, to say nothing of the better service and satisfaction all around.

Loading Crane for Truck

A. P. Dienst Company, 140th Street and Third Avenue, N. Y., uses a crane as shown, for quickly loading the trucks with tools, hardware, and heavy units, such as machinery and parts.

Dienst Company's Packard

A truck that is making good in the wholesale and retail heavy hardware business is the 3-ton Packard of the Dienst Company, 140th Street and 3rd Avenue, New York City. This truck was put in long haul service in competition with the railroads, two years ago last May. It did not displace any horses, as goods were shipped by railroad. It averages about 50 miles a day, making trips to White Plains, 22 miles each way, and to Portchester, etc. This company does a large business in heavy hardware, the stock being one of almost infinite variety. The truck body is considerably wider than the front seat, there



Alco Gasoline and C. T. Electric in Hardware Service

The five-ton Alco hauls Henry Disston products between factory and wharves. The electric, with four men, now does the work of twelve men Note the dumping body with top

being an opening on each side of the seat, so that long iron rods or pipe can protrude forward. The driver was sent to the Packard factory, and given suitable instructions, and has proved very satisfactory, the same man still operating the truck. The company is well pleased with the investment and say that the advantage is not that it costs less to get the goods to the customer by this method, but the speedy delivery is very valuable, and business is obtained that they otherwise would not be able to handle.

Sometimes three long trips a day are made. On the day of this writing, at 9:30 in the morning, the truck had already hauled 3 tons of freight from the railroad station to the store. The cost of operation on this truck has averaged $13.50 per day the second year, and was considerably less the first year. This figure includes interest on the investment of 6 per cent., depreciation at 20 per cent., tires, garaging by an outside firm, and driver's and helper's wages. When asked for criticism, the statement was made that although the service department cared for them in good shape, they thought the price charged them for small parts altogether too high. They are now doing all their own repairing, and expect to effect an economy by doing so.

One of the features of the Dienst Company's service is the method of loading by means of an overhead crane railway. This device is shown in an accompanying cut.

Hardware Dealers' Single Truck Saves Ten Per Cent Over Horses

An interesting performance, showing how a single truck can make good, is that of the well-known manufacturers of saws, Henry Disston & Sons, Tacony, Philadelphia, Pa., who use a 5-ton Alco for hauling between the factory and the wharves at Chestnut Street, a distance of about 8 miles. Deliveries are also made to the various wholesale hardware dealers in the city. This truck was put in service the early part of February, 1912, and has displaced two two-horse teams. The statement was made by the secretary and treasurer of the company that it was giving excellent service, that it not only did the work of the two two-horse teams, but did it more satisfactorily, and was saving at least 10 per cent. over what it cost them to do the same work with the horses. Deliveries are made quicker, and the dealers better satisfied. The driver is a young man taken from the factory, and coached up by the Alco people, so that he is familiar with all the details of the mechanism.

Electric Does Work of Twelve Men

In addition to the gas truck, a 2-ton C. T. electric, made by the Commercial Truck Company of America, Philadelphia, is used in the yards for hauling all kinds of material from one point to another. This truck also occasionally makes short trips outside of the yard to the wharves at the river. The crew consists of the driver and three helpers, as a great amount of matter has to be handled continually. The driver acts as a sort of foreman over these men. This work was formerly done by horses, and horses are still employed in the yards, but the truck and its four men now do the work formerly done by twelve men, showing marked economy. This electric has a peculiar dumping body as shown in the accompanying illustration. The sides and top are also easily removable; the tail gate is somewhat novel in design being hinged both top and bottom. When the body is being dumped the gate swings on the top hinge allowing the material to be discharged, while under ordinary running it can be swung out in the usual fashion on the lower hinge. A winch at the forward end is hand operated to raise the body, or by cables through an opening in the front of the body, with the body in normal position, it can be used to load heavy material into the truck body.

An up-to-date stone fireproof garage is on the premises, a novel fact in connection with the garage being that it was built from the old grindstones used in the works, as was also the high stone wall surrounding the entire plant. Here the trucks are properly cared for, the electric charged, and all minor repairs made. The service of the vehicle is so satisfactory that the company would not think of going back to horse methods again.

Federal Car in Lumber Service
A typical load hauled on the one-ton Federal car in the service of the Van Arsdale Harris Lumber Company, of San Francisco
Note the ratchet device for binding load: rear one not shown

Krebs Commercial Cars—Shaft and Chain Driven

THE Krebs commercial car is manufactured by the Krebs Commercial Car Company, Clyde, Ohio, and is made in two types of chasses, a shaft driven car, fitted with pneumatic tires, and a chain driven car, with solid tires. Both types of cars have from 1200 to 1500 lbs. capacity and are fitted with express wagon type body and covered body, but can be fitted with any special type body that demand might require.

The Motor and Ignition

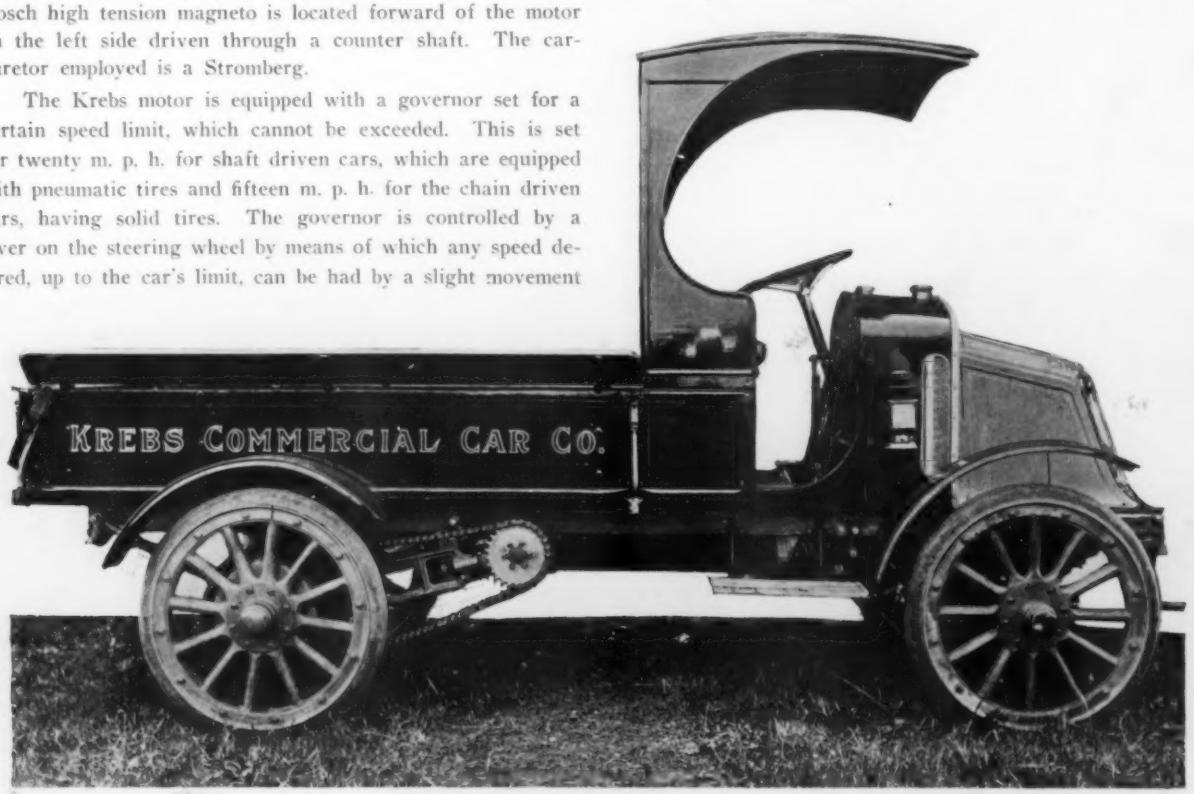
The Krebs motor is a two cylinder, two cycle water cooled motor, having a bore of 4½ in. and a stroke of 5 in. It is hung from two cross members located under a French type hood. The intake manifold is located on the right side, while the exhaust manifold is on the left. The cylinders are cast en bloc and are cooled by means of a Thermo-Syphon circulation system, employing a vertical tube radiator. The Bosch high tension magneto is located forward of the motor on the left side driven through a counter shaft. The carburetor employed is a Stromberg.

The Krebs motor is equipped with a governor set for a certain speed limit, which cannot be exceeded. This is set for twenty m. p. h. for shaft driven cars, which are equipped with pneumatic tires and fifteen m. p. h. for the chain driven cars, having solid tires. The governor is controlled by a lever on the steering wheel by means of which any speed desired, up to the car's limit, can be had by a slight movement of same. The same lever controls the magneto, thus automatically adjusting the time of ignition to suit the speed of the motor.

The Transmission and Axles

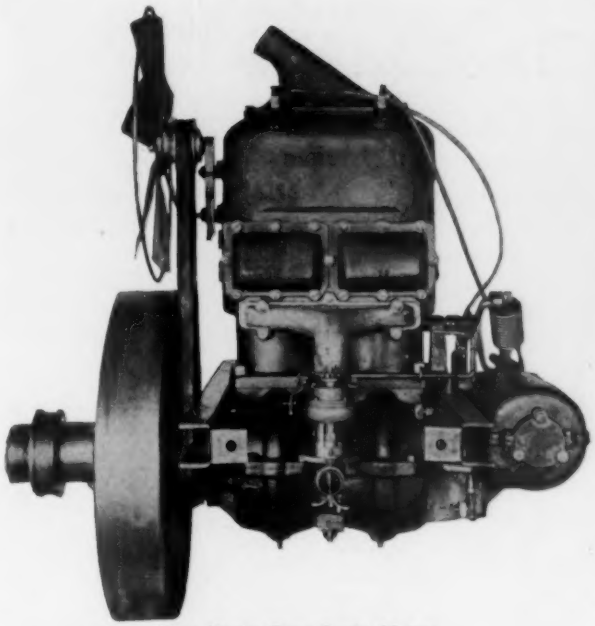
The Brown-Lipe selective type transmission, with three speeds forward and one reverse, is employed. This unit is hung from two cross members, driven through a universally jointed shaft from the motor. The control levers are mounted on the transmission case in the center. A cone clutch is employed, self contained on crank shaft.

The front axles on both models are drop forgings, of the I-beam section type, 1¾ x 2⅝ in. The rear axle on Model A is rectangular, 1¾ x 2¼ in. The drive is through jack shaft and side chains. In Model B a full floating axle is used, having New Departure bearings. The driving shaft has two Spicer universal joints.



The Krebs Chain-Drive Model

Here is shown the Krebs commercial car with chain drive. The jack shaft, located amidships, drives the wheels, through chain and sprockets. The style of radius rod, with its method of adjustment, is plainly shown. The control levers are located in the center and drive is from the left



The Krebs Two-Cycle Motor

Here is shown the intake side of the Krebs two-cylinder, two-cycle motor. The automatic governor can be seen located in front, across from which the magneto is located. The fan is belt-driven from pulley just forward of flywheel, and has an adjustable bracket. The method of attaching motor to cross members is plainly shown.

Brakes and Springs

On both models double internal brakes are used, applied on brake drums on rear wheels, operated by hand lever and pedal through adjustable brake rods. The front springs are semi-elliptic, 2 in. wide and 40 in. long. The rear springs are also semi-elliptic, 2 in. wide and 50 in. long, supporting the frame from without by means of shackles. The spring bolts all around are supplied with grease cups.

Frame and Wheels

The pressed steel frame is of channel section, 4 x 2 x 3-16 in., strengthened by cross members, in addition to those, supporting the motor and transmission. The wheel base is 100 in. and tread 56 in. The 34 in. wheels are of the artillery type,

The Krebs Shaft-Drive Model

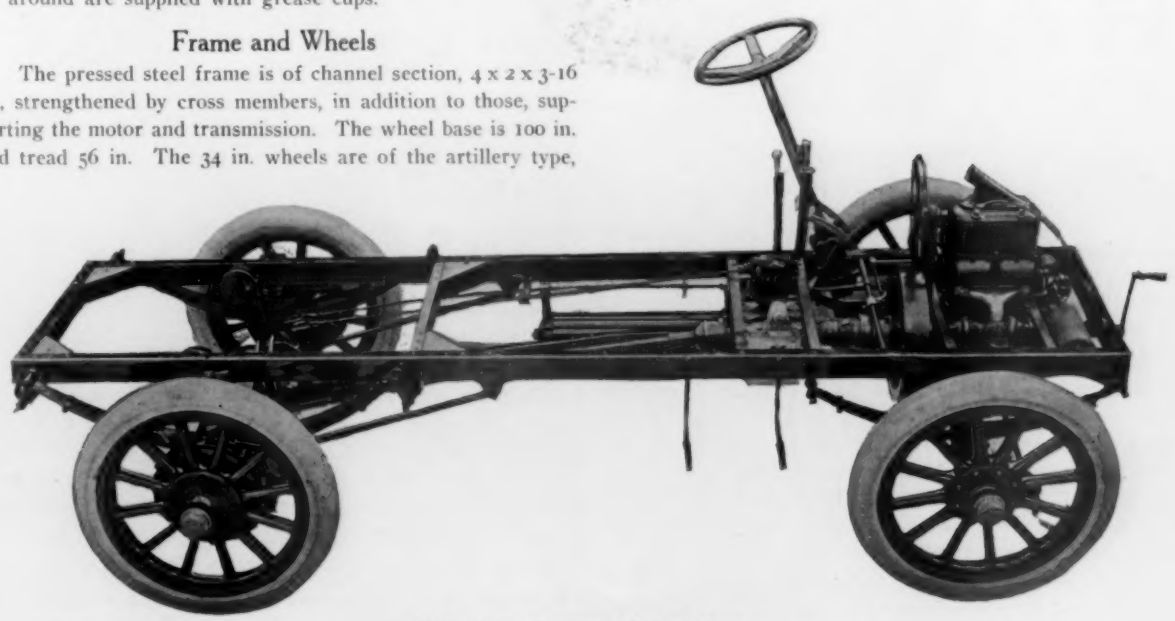
This model is driven by means of a double universal jointed propeller shaft. The radiator is located at dash, together with gasoline tank. The large muffler can be seen located just under the left member of the frame.

having twelve 1¾ in. spokes, front and rear. Model A employs 34 x 3 in. solid tires, having S. A. E. bands and Model B employs 34 x 4 in. pneumatic tires, with demountable rims.

Specifications and Equipment

The steering gear is of the Jaycox, worm and nut type. Model A without body weighs 2250 lbs., with body 2350 lbs., while Model B without body weighs 2200 lbs., and with body 2400 lbs. The style of body is optional and these come in either Brewster green or red color, as per choice. The gasoline tank has a capacity of 13 gal. The equipment consists of horn, tool kit, with full set of tools including jack, two side oil lamps and tail lamp.

Both chasses are listed at $1375, f. o. b. Clyde, O. Model A standard open express body, cab seat, $1510, f. o. b. Clyde, O. Model B Standard delivery body, screened, $1550, f. o. b. Clyde, O.



The Krebs Commercial Car Chassis

This illustration shows plainly how both motor and transmission are hung from cross members. The radius rods are attached to special brackets on under side of frame. The adjustable brake rods are shown, as are also the shock absorbers, which are applied to the rear axle. The pedals are both adjustable.

Garford One and a Half, Three and Five-Ton Commercial Cars

GARFORD Motor Trucks are made in three sizes at the Garford-Elyria plant of the Willys-Overland Company, that is in one and a half, three and five ton sizes. These are known as Models H, J, and D, respectively. The smaller car is especially adapted for fire apparatus and the like where speed is a requisite.

Motors

Three and five ton models are equipped with an L head en bloc engine, 4¼ x 5¼ in., the 1½ ton model with a T head unit with cylinders, 4¾ x 5¼ in., cast in pairs, inlet valves on the right, exhaust on the left. In the en bloc motor the valves are on the right side and springs are enclosed by cover plates. Inlet and exhaust ports in this are 1½ in. in diameter, lift 13-32 in., valve ports 1⅞ in. The lifters are fitted with hardened and ground steel rollers 1⅛ in. in diameter, and operate in bronze guides 3 11-16 in. long. Valve ports in the T head motor are 2 13-32 in. in diameter and the plunger guides are also of bronze.

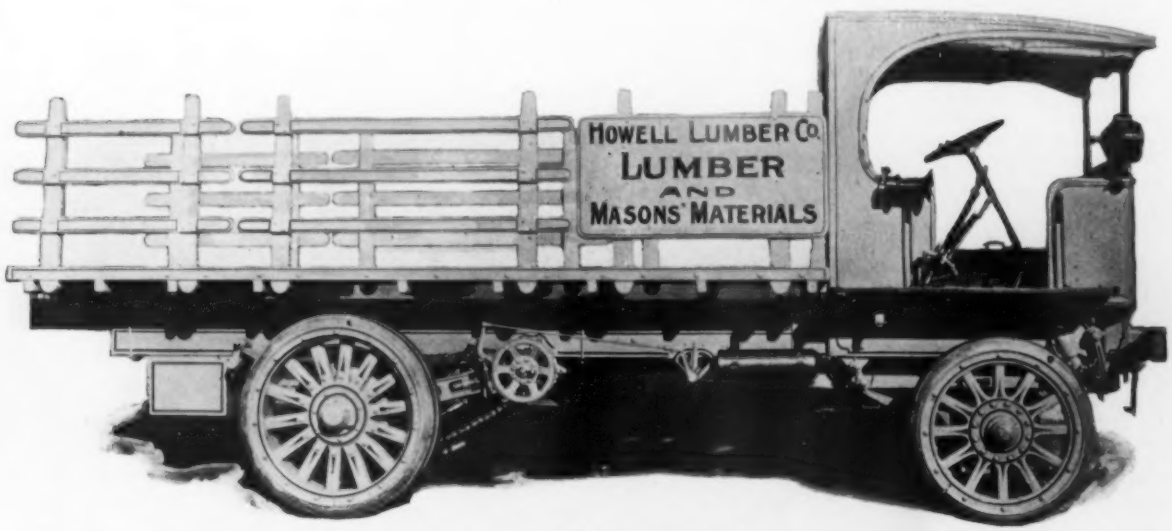
Connecting rods in the three and five ton truck engines are 11½ in. long, I beam section, with crank pin bearings held together with two steel bolts, lock nuts and cotters. Although the cylinders are cast en bloc, there are three bearings on the crank shaft, front being 3¼ in. long, center 2¾ in. and rear 4 in. long. There are three rings on the pistons of the en bloc motor, these above the wrist pins.

In the three and five ton trucks, the engine is directly under the low dropped floor boards and covered by a metal bonnet, and when this is displaced, there is access to the engine from both sides. In the 1½ ton model, however, the motor is forward of the dash under a metal hood.

Clutch and Transmission

Clutch in all three models is cone type with cork inserts. Tension is maintained with a single spring and operation is through pedal. In the three and five ton cars the clutch is 14 45-64 in. diameter, 2⅛ in. face and 8 degrees angle. There are twenty-two cork inserts, these 1 in. diameter and 11-16 in. long. Spring pressure is 350 lbs. The fly wheel is cast iron 16¾ x 4¼ in. and weighs 79.5 lbs.

In the 1½ ton car transmission is selective sliding gear with three speeds and reverse. The direct drive is on the third speed through clutch gear. Bearings are Hess-Bright annular ball. Gears are spur type, 6-8 pitch.



Garford Fitted With Lumber Body

This five-ton Garford truck has its engine located under the floorboard of cab, with removable hood. The cab is of steel. Note the outside brake drum on jack shaft, with brake rods running forward. The stake sections can easily be removed if necessity demands

Transmission of the three ton car is three speed selective sliding gear, three speeds forward, one reverse, direct drive on third speed. Bearings are roller.

The five ton transmission affords four speeds ahead with no direct drive. The splined main shaft is 2 in. diameter and bearings are Hess-Bright annular ball. Transmission in the small car is mounted on the sub frame, but in the three and five ton trucks it is amidships. The forward support of the aluminum gear box is a heavy through bolt anchoring to a cross member of the frame. The two rear supports are afforded by the jack shaft.

Jack shaft in the five ton model is 2 in. in diameter, this on the splined end. Outer diameter is 1½ in. Final drive in the two large cars is through side chains, in the 1½ ton type through a propeller shaft having 2 universal joints, shaft diameter 1 11-32 in.

Rear axle in the small car is floating type with roller wheel bearings. In the large cars the rear axle is a solid forging, front axle a center dropped forging of the reversed Elliott type, spring seats integral.

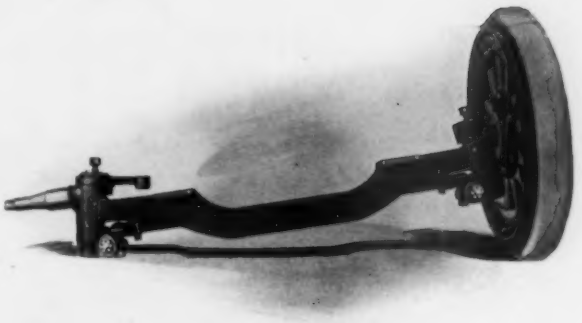
Wheels and Tires

Wheels are wood, artillery type, fitted with 36 x 4 in. pneumatic front tires and 36 x 4½ in. dual pneumatic tires on the 1½ ton car, spokes twelve front and rear being 1⅝ x 2⅛ in. In the three ton car, wheels are 36 in., twelve spokes 2 x 3 in., tires 36 x 5 in. In the five ton model wheels are 40 in. with fourteen spokes 2½ x 5 in. Tires are 40 x 6 in., duals at the rear, 36 x 6 in. single front.

Frame, Brakes and Control

Frame is pressed steel, 7-32 in. stock, 34 in. wide in the 1½ ton model, pressed steel of 6 in. channel section in the three ton and 5-16 in. pressed steel with 6 in. channel in the five ton. Reinforcement is through cross pieces with integral gussets and all rivets are set on the vertical so that drive is against the heads. The side rails are marked by the absence of the usual rivets. Flanges are 2¾ in. wide, rails straight throughout.

Of brakes there are two sets in the five ton car, the service a contracting type 10 x 4 in., the two shoes having annular radiating grooves. Lining is Raybestos. The shoes are supported on a lug integral with the bottom of the gear box and on a bracket on the cross member of the frame. Rocker shaft for the rear wheel brakes is 1¼ in. in diameter. Rear brakes are in the wheel drums, expanding type, 19¾ x 4 in., area 350 sq. in. This is operated by hand lever at the right.



Garford Front Axle

Here is shown the front axle of the three and five-ton Garford truck. The steering pivots are surmounted by grease cups for lubrication purposes. The method of attaching tie rod to steering knuckles can be seen.

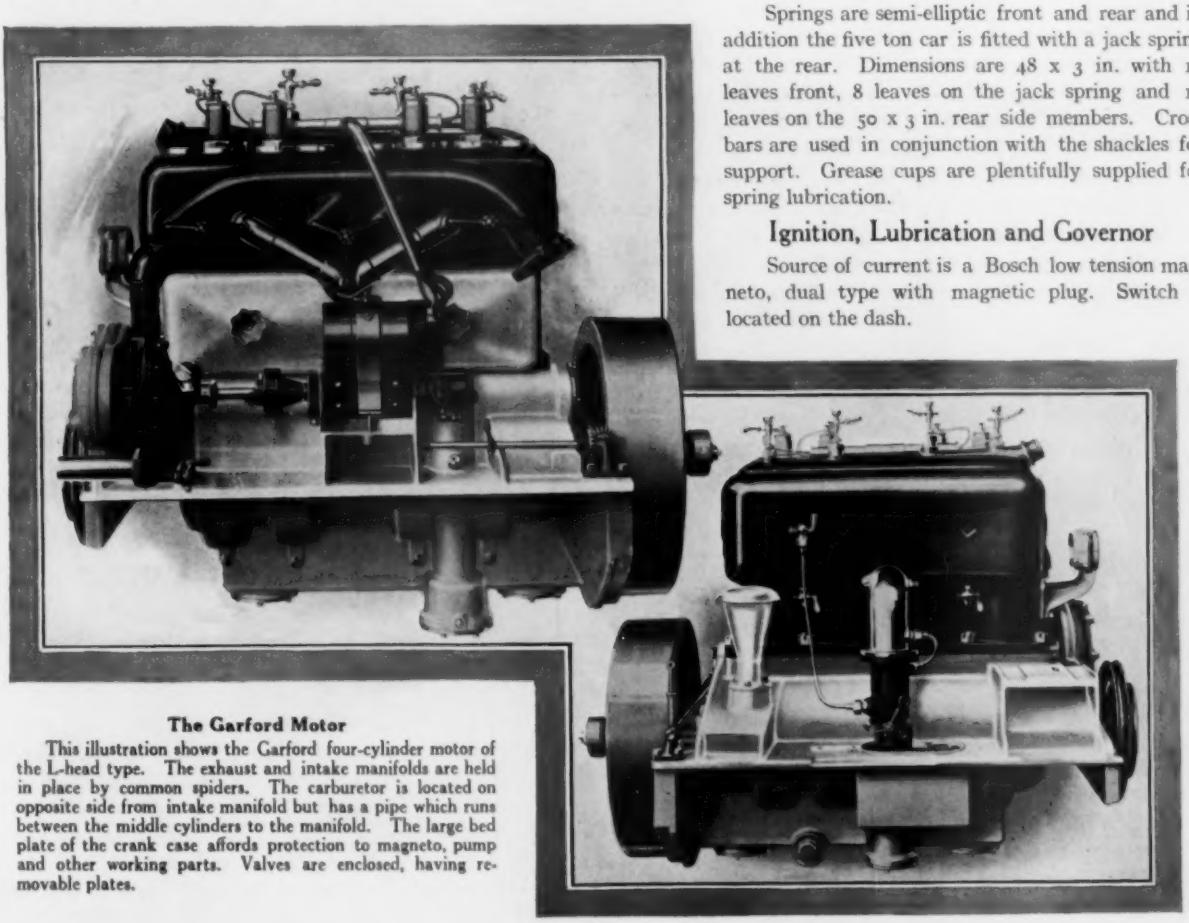
Gears are shifted by a lever at the right, the quadrant being just above the cab running board. The brake lever is beside it. Spark and throttle levers are above the steering wheel, 18 in. in diameter. Post is 1½ in. in diameter inclined at 23 degrees, system worm and sector. The steering arm is 10½ in. long, drag link is 1¼ in., small diameter and at the enlarged ends is fitted with buffer springs to take up shocks. The cross connection back of the axle is 1 25-32 in. in diameter.

Springs

Springs are semi-elliptic front and rear and in addition the five ton car is fitted with a jack spring at the rear. Dimensions are 48 x 3 in. with 10 leaves front, 8 leaves on the jack spring and 15 leaves on the 50 x 3 in. rear side members. Cross bars are used in conjunction with the shackles for support. Grease cups are plentifully supplied for spring lubrication.

Ignition, Lubrication and Governor

Source of current is a Bosch low tension magneto, dual type with magnetic plug. Switch is located on the dash.



The Garford Motor

This illustration shows the Garford four-cylinder motor of the L-head type. The exhaust and intake manifolds are held in place by common spiders. The carburetor is located on opposite side from intake manifold but has a pipe which runs between the middle cylinders to the manifold. The large bed plate of the crank case affords protection to magneto, pump and other working parts. Valves are enclosed, having removable plates.

The Five-Ton Garford

The Garford truck fitted with brewery body is here shown. The cab is of all steel having a folding windshield and curtains. Note the roomy driver's seat, with convenient location of levers and pedals

Oil is circulated by a gear driven pump, raised from the sump to the higher level through a copper tube to the main bearings. In due course oil is lead to the connecting rods and through tubes to the wrist pins. Cylinders are cared for in the splash created by rod travel. Gauge on the dash indicates the working of the system.

In order that a safe speed may not be exceeded in the heavy cars a fly ball governor completely enclosed, is fitted. This cannot be tampered with. It operates a butterfly valve in the intake.

Carburetor and Cooling

A float feed, Venturi tube type of carburetor is used, the body resting in an integral well of the crank case. Intake manifold is water jacketed.

Cooling in all models is by water, flat tube radiator used in the large cars, this supported on side springs and guided by bolts at the base. Water pump, centrifugal type, raises the water to the base of the cylinder jackets and after circulation this is discharged through the aluminum dome plate. The fan is driven through a V belt.

Driver's Cab and Loading Space

Three and five ton Garford cars are fitted with a steel cab, which with windshield and storm curtains provides a warm compartment for the driver in cold weather.

Loading platform of the five ton truck which is 128 in. wheel base is 170 in. long, 70 in. wide and 54 in. above the ground. Loading platform is 170 in. in the three ton car, 70 in. wide and 50 in. above the ground when light. Overall length of chassis is 217¾ in. Five ton chassis price is $4500, bodies built to suit requirements. Price of the 3 ton chassis is $3500, bodies built to meet requirements.

TO DEMONSTRATE OR NOT

Advisability of demonstrations is a subject in which interest is keen, just at present. Not so very long back, one had merely to whisper that he contemplated purchase of a car to be flooded with agents eager to demonstrate. But that has passed and to-day demonstrations are rarer than formerly.

In due course, makers or their agents arrived at the point where they set a charge for demonstrating a machine. They could well do that because of the increased use of their cars. Just at present, there are some makers who will not demonstrate at all, contending that it is a waste of time for this reason. Many of their cars are in actual service in the principal cities, and if a prospective purchaser in that city desires a demonstration, why he has simply to refer to the man who is actually using a car and get the story straight from him. As the car is actually working, the results are much more weighty and would be more of a deciding influence in decision than otherwise.

Not long ago a comparatively young concern received an order for several cars and inasmuch as the purchaser was using a fleet of another make, needless to say the order was a surprise. As the acquaintance between the two factions ripened into a thorough mutual understanding, the purchaser was asked why he decided to buy. "Because I knew that you could not afford to fall down. You would do your best to see that my cars were right. Did I want a demonstration? No, I had been watching your cars in various lines of business for some time."

Demonstrations will doubtless dwindle until they become a rarity, as they are coming more and more to be regarded as unnecessary.

Splitdorf Electrical Company has established a new service station in New York City, at 18-20 W. 63rd Street, in charge of Oscar J. Rohde, who has been New York manager for several years. This station will have a miniature factory equipment and will be able to take care of almost anything in the way of installing and caring for ignition and lighting outfits.

The Muncie Transmissions

THE Muncie Gear Works, Muncie, Ind., is featuring for commercial car service a three speed and reverse selective sliding gear transmission, which is equipped throughout with Hyatt roller bearings, and is to be had in 20, 30 and 40 h.p. sizes. The general construction of this set is shown in an accompanying illustration.

The makers claim that owing to the heavy shocks imposed on truck gear sets the use of roller bearings is desirable and essential, hence such equipment is used in this set.

The spline shaft in the 40 h. p. model is 2 in. across the spline section and 2 in. across the round. This spline shaft is heat treated before machining but not afterwards so that, according to the makers, it remains perfectly true and round.

The sliding gears are ground inside to fit the round part of the shaft, the ends of which enter the primary gear and is mounted on solid roller bearings running on hardened and ground surfaces.

The side shaft gears are of increased width of face in proportion to the back gear ratio, this so for the reason that much of the work of a truck is done on the lower speeds and reverse and at times the gears are subjected to intense strains. In the largest of these three speed sliding gear sets the second speed gear is 25 per cent. wider than the high speed, while the third speed and reverse are 50 per cent. wider. The common practice in pleasure car construction and, in fact, in many trucks is to have all gears of the same face. There is a ¼ in. clearance between gears.

The reverse idler, or, as the makers term it, the "pocket reverse gear," is as large as the largest sliding gear and thus formed to reduce the speed about one-half of the ordinary construction as well as to increase the gear life about double the usual construction. Being large the idler effectually decreases the noise about one-half, and at the same time decreases the strains between the three shaft centers. This pocket gear or reverse idler is made large in diameter in order to obtain the largest shaft possible, this shaft or spindle fitted with roller bearings ⅜ in. diameter, these preventing the idler spindle from being worn flat or out of true, which would mean an annoying rattle often noticed in pleasure car construction, not to mention uneven wearing of the gear with consequent damage to other gears when the reverse combination is employed.

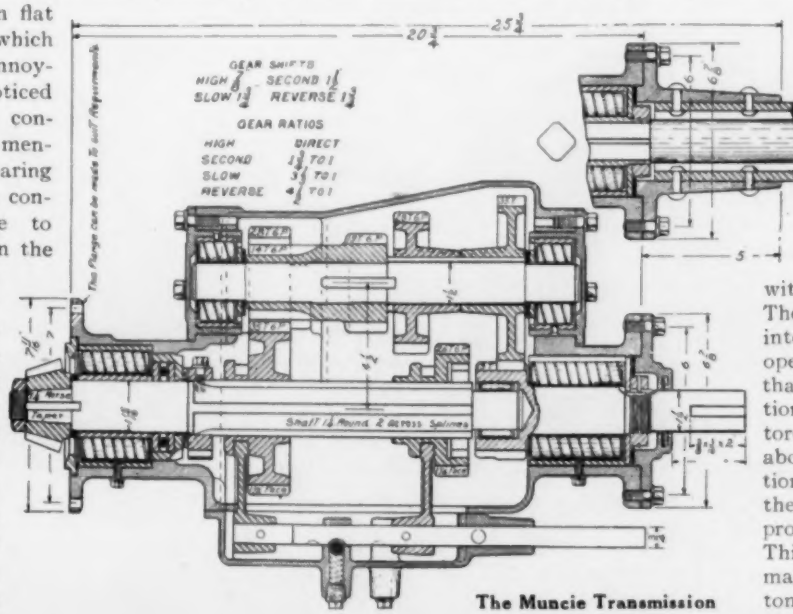
The reduction of double gear is made in one piece in order to permit of keying the member under the large end and to allow the use of the largest shaft possible with no key under the smaller end. This construction permits of permanently keeping the small end of the double gear true and round. Obviously keying under the end of the member at which there is the greatest amount of stock would appear to be eminently good practice.

Another "Muncie" feature is that the two large gears on the side shaft are formed with long integral hubs which abutt one another, thus forming a support that is solid and staunch and superior to the usual method of using a piece of steel tubing as a separator. Then, too, another consideration, not to be lost sight of by any means, is that longer and stronger keys may be used on the shaft. In truck construction all transmission parts must be strong and the long keys used on these hub gears make for strength.

The gear box is made of malleable iron and the gears are 3½ per cent. nickel steel, heat treated and case hardened and made complete in the Muncie plant, which is very well equipped. All gears are full 6-in. pitch and it is the contention of H. L. Warner, M.E., the designer of this gear set, that the full 6-in. pitch is superior to the stub construction as the pitch used here permits of earlier entry of the teeth with a longer engagement than is to be had with the stub form and, furthermore the roll contact is more nearly perfect, which makes for quietness in action. The driving pinion is formed with the shaft.

All gear shafts are 50 point carbon steel, while the keys are made of tool steel. This three speed and reverse sliding gear set is designed either to bolt to the front of the jack shaft or rear axle or is to be had with arms for support on a subframe.

In the Muncie Jack Shaft, the Differential is mounted on large ball bearings and the bevel ring is backed up by a roller bearing which is adjustable, likewise the bearing prevents springing of the gear ring when a heavy shock is imposed on the car as in quick starting or in reverse. The jack shaft is equipped with drop forged sprockets and pressed steel brake drums for the internal expanding brakes. All operating levers are carried inside the frame and the hangers used permit of widths varying from 30 to 40 in.



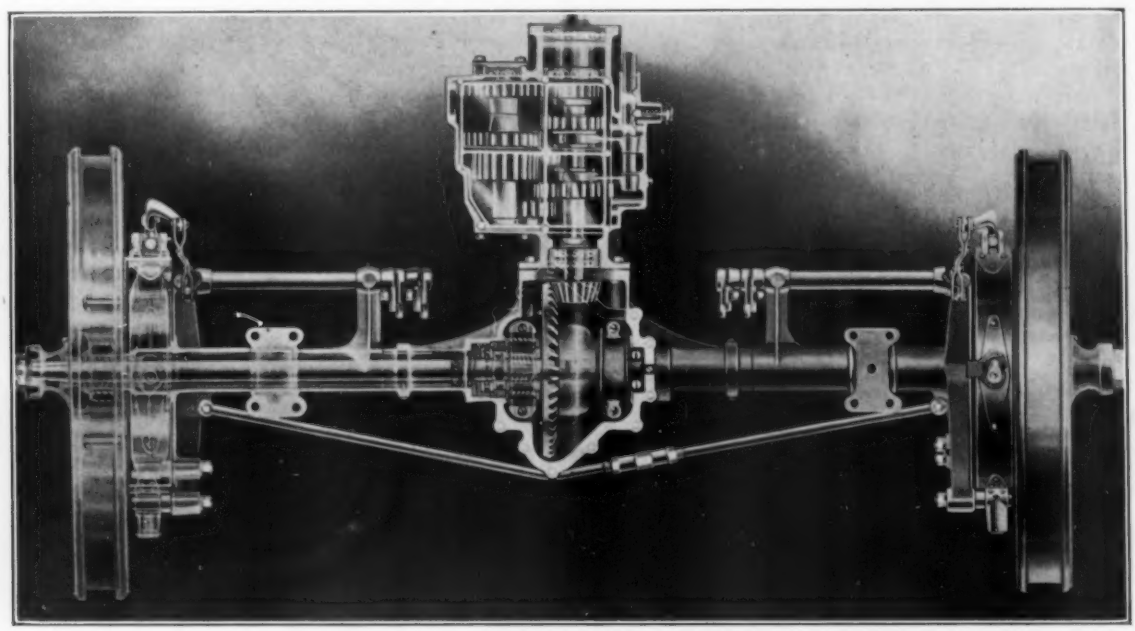
The Muncie Transmission

The entire set of gears in the differential is made 3½ per cent nickel or vanadium steel as are also the axles which are heat treated and ground. The jack shaft is provided with the usual Muncie type of radius rod pivoted at the rear and fitted with chain adjusters forward. The hub through which the internal expanding brakes operate carries the torque so that the two swiveling connections are relieved of it. The torque arms as mentioned above have swiveling connections and chain adjusters at the front end and these also provide for uneven roads. This jack shaft equipment is made in one, two and three-ton sizes.

Three-Quarter Floating Rear Axle of Overland Model 69

The Willys-Overland Company, Toledo, O., employs on the Overland Model 69 a three-quarter floating rear axle, claimed to have a number of important advantages over the semi-floating rear axle design.

In the Overland three-quarter floating rear axle, the load is carried on the axle housing which is reinforced by an inner steel tube riveted and keyed to the housing proper. The rear wheel roller bearings run on the hardened seamless steel tube which projects from the axle housing on either side. The differential bearings and the wheel bearings do not come in contact with the axle drive shafts at all. These drive shafts, which are of special heat-treated chrome-nickel steel, only have to turn the wheels. The differential bearings, therefore, have to bear only their own stresses and the broad, elastic Hyatt rear-wheel bearings carry the rear load of the car. The rear-wheel bearings, moreover, are in the vertical plane of the spokes; they receive the load straight from above, and need no adjustment whatever. Side thrust is taken up by an adjustable ball thrust bearing on either side of the differential.



The Overland Three-Quarter Floating Axle

Here is shown a skeleton view of the new three-quarter axle employed on the Model 69, Overland cars. The load is carried on the axle housing, which is reinforced by an inner steel tube riveted and keyed to the housing proper

The only difference there is between the full-floating rear axle—such as is used in the Overland Model 71—and the new Overland three-quarter floating axle of Model 69 is that in the full-floating axle the rear wheel is fastened to the axle housing, while in the three-quarter floating type of Model 69 the wheel is fastened to the axle shaft. But in the way they carry the load, and in the independence of the bearings, the three-quarter floating axle and the full-floating type are alike.

The brakes mounted on the new axle are of new design. The diameter of the drums is 13⅜ in. and their width, 2⅞ in., with a brake band 2¼ in. wide. The brakes are of gradual yet powerful application. The more often used service brake is adjustable in two ways, once at the adjustment sector, for coarse adjustment, and again by shortening the service brake band levers, for fine adjustment.

Every part of the axle mechanism is easily and quickly reached. Thrust bearings, differential bearings and the large bevel gear may be adjusted without difficulty.

The Overland combines the transmission and the differential mechanism into one unit, on the rear axle, instead of amidships. In the Overland transmission the shafts are short and all gear changes are made with short and quick movements of the gear-shifting lever in the center of the car.

The main drive shaft runs not open but encased in a steel torsion tube which serves the double purpose of taking up the twisting stresses of the rear axle and of keeping the drive shaft and the whole driving mechanism in alignment.

A GOOD RECORD

Covering 886 miles, hauling 192 tons, consuming 254 gallons of gasoline and 21 gallons of oil—that was last month's record of a two ton Kissel Kar truck used by the Chester Brewing Company, of Chester, Pa. The Company considers this an exceptionally fine showing, especially so considering that more than 70 per cent. of the roads traversed are up grade.

THE AVERY COMPANY, Peoria, Ill., has recently issued a booklet, in the form of an announcement, descriptive of its new Type "B" truck.

Wear and Tear in Solid Rubber Truck Tires

A TOPIC of natural interest to all owners and operators of motor driven commercial vehicles, is the discussion of methods to prevent the wear and tear of solid rubber truck tires. This part of the equipment is admittedly the most serious item in the cost of truck up-keep," says C. W. Martin, sales manager of The Goodyear Tire & Rubber Company, Akron, O. "There are many insignificant details in the operation and care of a motor truck that have an important bearing upon the life and service of its rubber tires.

Natural and Ordinary Wear

"Natural or ordinary wear under normal conditions, causing abrasion, is attributable principally to tractive effort, starting and stopping, or skidding. When these elements are not attended by others which will be described later on, a solid rubber tire can be expected to give the maximum of service and to wear out legitimately.

"Undue abrasion may be caused by wheels being out of alignment, resulting in a tire wearing down smoothly and prematurely, thus, more than likely causing an impression with the truck owner that the tire is not all that it should be in the matter of quality and workmanship.

"Disalignment sufficient to produce this effect in at least some degree may be so slight as to be unnoticeable in the absence of special attention," asserts Mr. Martin. "Wheels out of alignment are very frequently found, particularly front wheels. Usually these result from striking curb stones or any other obstructions glancing blows, thus causing bent axles, wrenched steering knuckles, or dished wheels. The wear is the same as would be obtained by holding the tread of the tire on a swiftly moving grind stone and revolving it slowly.

"Turning the front wheels by means of the steering apparatus when the truck is not in motion also has its bad effect.

"Disalignment may be detected by measuring the distance between rims of the two front or two rear wheels at the extreme fore and aft points, care being exercised to see that the front wheels, when measuring them, are pointing straight ahead or parallel with the body of the truck. The distance at fore and aft points will be found to be the same if the wheels are in perfect alignment.

Cutting

"Traveling over exceedingly rough pavements and sharp stones, such as are found on newly macadamized roads, produces cuts into which sand and grit work, slowly enlarging the gap and eventually causing the destruction of a solid rubber truck tire.

"Continual running in car tracks invariably results in the destruction of a truck tire, as the edge of the tire, or the very small portion which runs on the rail, is carrying the load intended for the whole tire. Also a shearing effect is thus produced which is very injurious to the tire's fastening. Cutting may also be caused by careless driving on streets in normal condition, or by careful driving combined with overloading, on bad streets.

Disintegration

"This condition may be due to the tire being allowed to stand in oil in the garage. Oil has a chemical action upon rubber which is extremely injurious.

Proper Application

"In this day of increasing popularity of demountable tires and standard wheels as adopted by the Society of Automobile Engineers, it is important that wheels be of proper dimensions and that all bolts be thoroughly tightened so as to prevent circumferential movement of the tire on the wheel.

Overloading

"A tire will fail to stand up under overloading, which strains the fastening and crushes the tread, causing bruises and chafing. Speeding virtually has the same results as overloading, producing shocks when riding over obstacles of various kinds which bruise and cut the rubber.

"The Goodyear Tire & Rubber Company, pioneers in the manufacture of Endless Rubber Truck Tires, after a thorough and scientific analysis of all conditions and requirements by their Experimental Engineering Department, have adopted and recommend the following graduated table of carrying weights.

	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	M.P.H.
2 in. Singles	450	475	500	525	550	575	20
2½ in. Singles	670	710	750	790	830	870	20
3 in. Singles	900	950	1000	1050	1100	1150	20
3½ in. Singles	1130	1190	1250	1310	1370	1430	18
4 in. Singles	1350	1425	1500	1575	1650	1725	16
5 in. Singles	1800	1900	2000	2100	2200	2300	14
6 in. Singles	2250	2375	2500	2625	2750	2875	12
7 in. Singles	2700	2850	3000	3150	3300	3450	10
2 in. Dual	1125	1188	1250	1312	1375	1438	18
2½ in. Dual	1675	1775	1875	1975	2075	2175	18
3 in. Dual	2250	2375	2500	2625	2750	2875	16
3½ in. Dual	2825	2975	3125	3275	3425	3575	14
4 in. Dual	3375	3560	3750	3940	4125	4310	13
5 in. Dual	4500	4750	5000	5250	5500	5750	12
6 in. Dual	5625	5940	6250	6565	6875	7190	10
7 in. Dual	6750	7125	7500	7875	8250	8625	10

"It will be noted that tires are rated according to their diameters as well as their cross-sectional size, and speed has been given proper consideration.

Quickly Removable Body

The above cut shows a body arranged so that it can be quickly removed and replaced by another. The bands on each side form a loop at the top, by which the body is lifted, and while in position the body is held downward and forward by the turnbuckle and links shown. The car is by Sidney, Straker & Squier, Ltd., London.

Motor Truck Production and Distribution

BY ADRIAN D. STEVENSON

ILL the tail wag the dog or the dog wag the tail, is the vital problem in most every new industry. In the commercial vehicle trade, at the present time, we are too often met with the spectacle of the tail wagging the dog, and from time to time we read the obituary notices. Enthusiasm is a good thing but should not take the place of or even overrun keen business judgment. Yet it often does. Anything to sell the truck would seem the policy of some. The cost of production seems to have been forgotten. Notwithstanding the newness of the industry, factory methods and factory costs are well established. It is of no difference so far as factory cost goes whether it be street cars or commercial trucks.

The trouble lies not in the factory cost but in the item known as distribution cost. This with factory cost makes up the commercial cost. It is obvious when the commercial cost reaches the selling price the business has no good reason to exist save for speculative purposes. It is a good thing to keep factory costs as low as possible per unit produced but the problem is to do so without sacrificing the article. Then, too, there should be a fixed ratio between factory cost and distribution cost, no matter whether the business be carried on along the conservative progressive line or along the big production cheap sale line. The great obstacle that lies in the path of the motor truck builder of the present and which has without doubt ruined many is that few know what the ratio between factory and distribution costs must be. One thing is certain; that sale prices made without regard to this factor will lead to grave consequences. As has often been said it is one thing to build a commercial truck, but quite another to market it. Probably much trouble has come from the notion that a truck can be sold by the same process as such well known things as typewriters, sewing machines, etc. If we look back through history we find it took some time for the makers of those well known articles to settle down to sane selling methods.

The field for the power wagon is a great one, but yet a most elusive one. The justification of this revolutionary method of haulage must be proven to the point where no question is asked. The development of its production must go through successive cycles much the same as did the manufacture of locomotives, trolley cars and all well known tractive machinery. The wise manufacturer will do well to analyze his costs in minute detail. If he don't expect to make money the first few years it is most important that quality should not be sacrificed for a loose and extravagant distribution system. A few good cars sold is better than a multitude of poorly made cars sold by cutting quality to increase margin used in selling. A good truck may not make a lot of immediate sales, but it is a safe wager that one bad truck will prevent many sales.

Consider for an instant that the oldest and largest manufacturer of trucks in Europe produces not more than four hundred per year and that the largest concern in America did not produce more than eight hundred in 1911 and we observe the portent of what lies before us. The power wagon is a piece of machinery pure and simple. Its increase in use will be commensurate with its increase in quality and not otherwise. Given a properly constructed vehicle the sales manager must apply a properly constructed system of distribution.

In getting at costs the first thing to be considered is the limit at which we must stop with our sale price. That limit save in rare cases is our old friend the horse. We must sell at a price to show that we are cheaper in the cycle of power wagon life. Now we come to our competitor; we must meet him at nearly equal value for the money. Having fixed on these, we can start with our sale price and go down through all the stages. First comes factory cost. And here we first have to consider location. A small town is often considered a fine place for a plant because of the cheapness of land and labor, to say nothing of bonuses often given to bring in a new industry. It is here that an element enters in oft overlooked. The small place may be cheaper but in locating in a large city, and the larger the better, the expense of the largest service station is eliminated, and though factory cost is increased, the distribution cost is decreased to say nothing of the many other advantages being located in the heart of the best market.

Location determined, factory methods must be determined. These fixed upon, we have an idea what it ought to cost to build the product with due reference to probable output. What we have left between factory cost and selling price is the limit of distribution cost. This last item is truly an involved one, but if properly analyzed and examined frequently will reveal the defects of salesmanship, advertising and the other charges. Many things deemed necessary are found quite the opposite. If every sale made is carefully examined it is quickly seen just what items of expense helped the sale and then those that don't contribute must be cut out. Experience is a good teacher, but sometimes an expensive one. There is plenty nowadays to be had by profiting by that of others who are producing and marketing other wares, the starting of which was more involved than the starting of the motor truck industry. Those who do profit now, when the final judgment is rendered, will be found to be the makers of reputable and reliable apparatus, whilst the great remainder will be monuments to the folly of bad business methods. In the meantime those who are conservative and use good sense must expect to allow for the damage done the general upbuilding of the trade by speculators and visionaries.

With the truck, absence of occupation is not rest,—it is expense

Menominee Motor Trucks in Fifteen Hundred Pound and One Ton Capacities

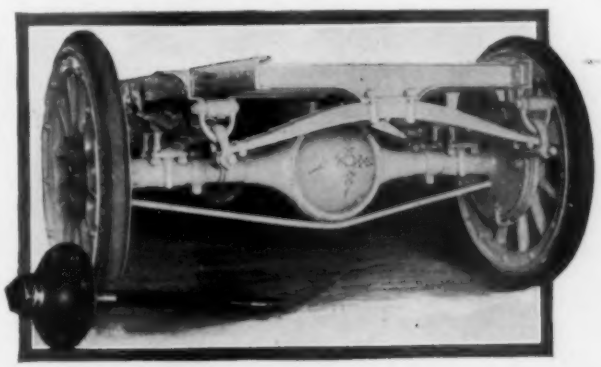
MENOMINEE Motor Trucks are manufactured by D. F. Poyer & Company, of Menominee, Mich., in two sizes of chasses, 1500 lbs. and one-ton carrying capacity. The construction is identical in both models. Carrying space in the smaller car is 78 x 42 in., and the wheel base is 112 in. In the one-ton model, however, the carrying space is 106 x 42 in., and the wheel base is 122 in.

The price of the 1500-lb. car, Model A, fitted with express or stake body, is $1200. The chassis only is $1125 and express or stake body separate is $75.

Hazard Unit Power Plant

A feature of the Menominee truck construction is the unit power plant. This is of the well-known Hazard L-head make and needs no extensive description. Model A is powered with the 25 h. p., 3¾ x 4½-in. motor, while Model B has a 30 h. p., 4 x 4½-in. outfit. The four-cylinder motor, disc clutch and three-speed transmission form a unit supported at three points. The forward support is a trunnion on the crank case, the rear a steel tube anchored in the transmission case and bearing at either end in a bracket on the frame rail. The clutch is an assembly of sixteen crucible steel discs, hardened, tempered and ground. When in operation a stream of oil is delivered to the clutch. The driving discs are held in position by three hardened studs forced into the flywheel. The driven members are attached to the clutch driver by six hardened bolts. Thrust is cared for through a ball thrust bearing. Clutch is pedal operated.

The transmission case is a unit in itself, but is bolted to the extension of the crank case, thus making a solid construction. Bearings are imported annular ball, and gears are made of special steel. At the rear of the crank case in a separate compartment are a pair of reduction gears, 1¼-in. face. This construction somewhat simplifies the general layout as a live rear axle is employed. Gears are operated on the splined shaft; the driving end is 1⅛ in. across the flats, 1 15-16 in. across the corners and 1½ in. long, with a hexagon nut for holding the universal joint in position. The gear shifter shafts are ¾ in. in diameter, forks clamped to the shafts, and a stuffing box is placed at the rear end to prevent oil leakage.

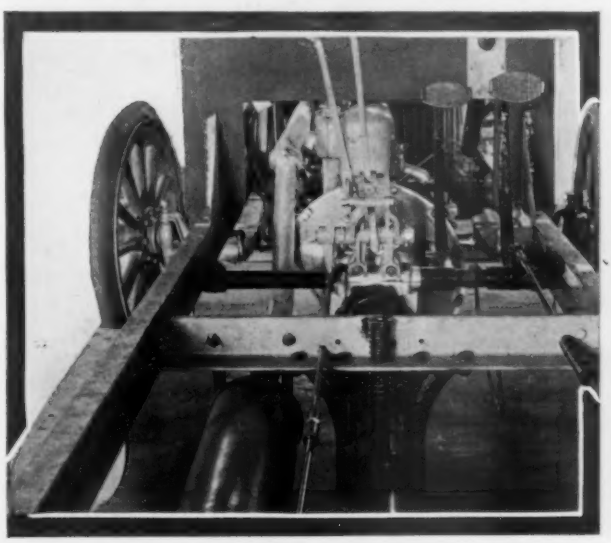


Menominee Rear Axle Housing

Rear view of chassis showing axle housing; one flange drive axle withdrawn; locking studs in the wheel hub, and the platform rear springs. The rear cross member of the frame is fitted with an integral pad to which the transverse spring is anchored.

Full Floating Rear Axle

The rear axle is of the full floating type, wheel flanges being used instead of the usual hub clutches. The main housing is cast steel and of neat design, case stiffened by means of a ¾-in. truss rod. Driving axles are 1 3-16 in. in diameter, squared at the inner ends, main body being 1 19-32 in. in diameter. A large, round inspection plate at the back of the case is easily removed if it is necessary to get at the differential. The pinion shaft housing is bolted to the front of the main case through six ½-in. steel studs. The face of master bevel and pinion is 1½ in. Drive from transmission to the rear axle is through a propeller shaft which is squared to 1⅜ in. on the forward end. The shaft is encased and at the forward end the tube is fitted with a trunnion which bears in a yoke, this trunnion being fitted with a helical steel spring, while the trunnion pin is anchored in a cross member of the frame. Thus vertical travel of the shaft is reduced to a minimum and shocks are materially overcome. A pair of radius rods ⅞ in. in diameter take the drive.



Menominee Torque Tube Support

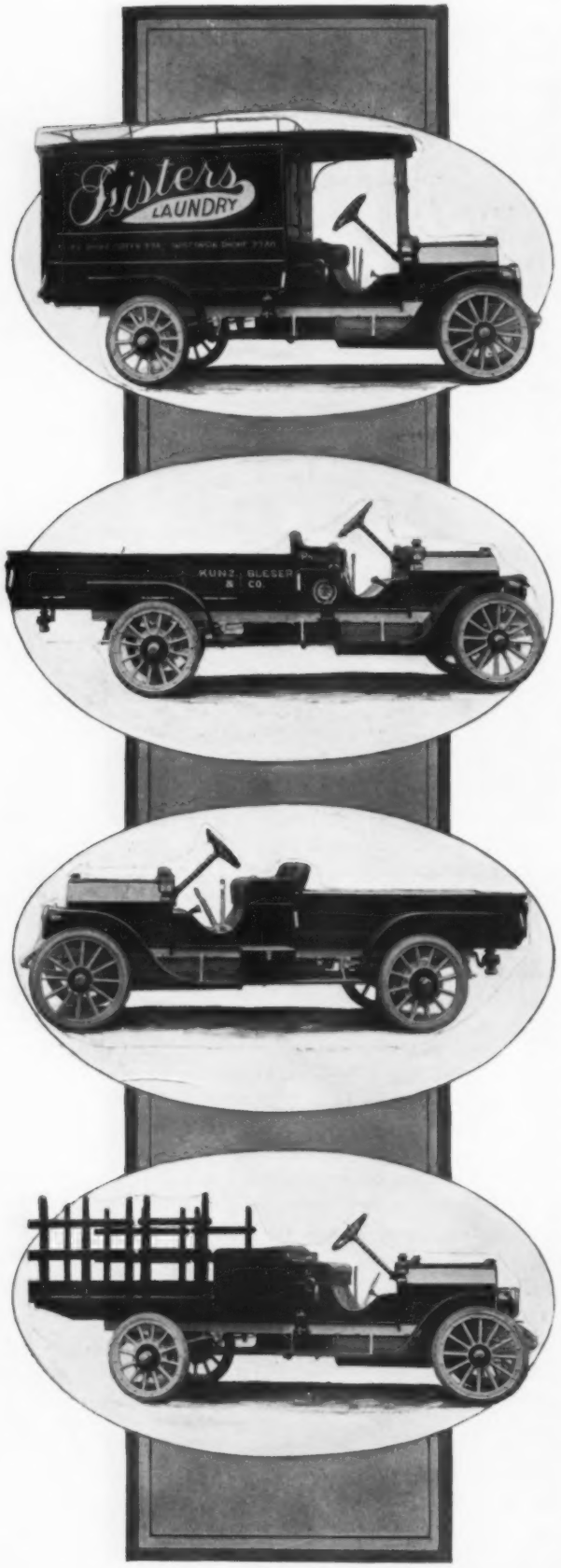
One tube is secured to a trunnion which travels up and down in a cast yoke secured to cross member of frame. Travel is controlled by the heavy coil spring shown.

Frame, Wheels and Brakes

On the Model A Menominee truck the frame is 3-in. heat treated channel steel; on the 2000-lb. car channel is 1 in. deeper. Reinforcement is by cross members hot riveted to place. A 1-in. cross bar is used forward to stiffen the frame.

The wheels are wood, artillery type, those of the small car being equipped with 32 x 3-in. solid rubber tires and 1¾-in. spokes. In the 2000-lb. car the wheels are fitted with 34 x 3-in. solid rubber tires. Wheel bearings are annular ball.

The brake drums are pressed steel, 14 in. in diameter. The service brakes are of the external contracting band type,



A Few Styles of Menominee Bodies

while the emergency are of internal expanding type. The brake cam shafts are ¾ in. diameter.

The Front Axle Springs

The front axle is an I-beam forging, 2⅝ x 1¾ in. in both models. The steering jaws and spring pads are formed integral. The front springs in both cars are semi-elliptic, 2½ in. wide, 40 in. long; the 1500-lb. car having seven graded leaves. The rear springs are platform type in both models, those in the small car being 42 x 2½ in. at the sides, with nine leaves; the transverse or rear cross member being 37 x 2½ in., with nine leaves. All spring leaves are lipped to preclude shuffling or side play.

Carburetor, Ignition and Lubrication

In both cars the engine is fitted with a Model L Schebler carburetor, the intake manifold being water jacketed. As both engines are L-head type the intake and exhaust manifolds are located on the left side, and, being clamp retained, are easily detached. The carburetor is controlled from the steering wheel. The gas and water manifolds are integral.

Ignition is by Remy dual system, magneto being driven from the ⅝-in. water pump shaft through a coupling. The instrument is attached to a bed plate integral with the crank case. The spark plugs are over the intake valves.

Oiling is by force feed and gravity, circulation induced by a gear-driven pump located at the left side forward drive from the cam shaft. The coil is raised from the sump and forced through a channel in the engine base and then delivered by gravity to pockets over the main bearings. The excess oil is thrown over the cylinders, cams and the like, though the system does not involve the usual splash since the connecting rods do not dip in the lubricant.

Control

Control follows the usual practice. Steering is from the right through a worm and gear system; post 1¾ in.; wheel 18 in.; post and spider black enameled. The drag link is ⅞ in. in diameter and the tie rod, of the same size, is in front of the axle.

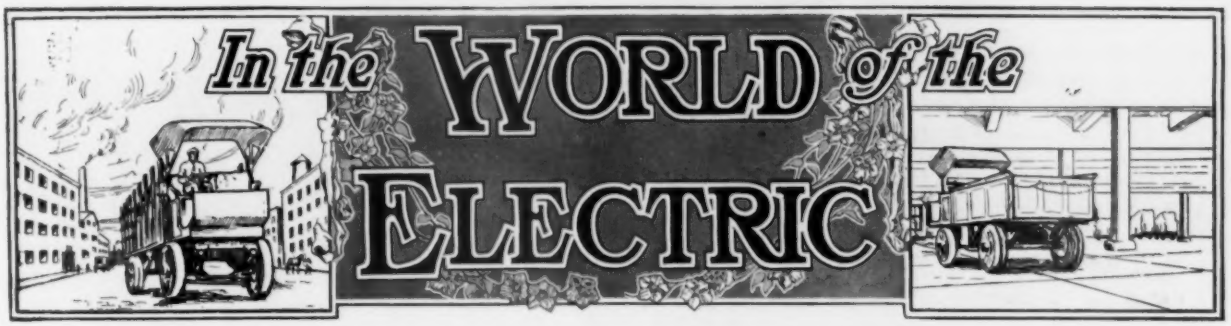
The controls are located at the center and supported on top of the transmission case, the cover plate of the gear box being very heavy and well braced. The pedals are also supported on the case.

Speed of the car is regulated by a governor, completely enclosed. This device is of the fly ball type and acts on a throttle in the intake. The governor is located on the left side forward of the water pump and involves a vertical arm or lever connected with a rod or cable fitted with a rack meshing with a pinion. The governor is inactive until a speed of 300 r. p. m. is attained. The governor is adjustable to meet various services, but once set and sealed cannot be tampered with. It is entirely independent of the carburetor.

Bodies

The Menominee chassis may be fitted with types of bodies to meet individual services. Prices of the smaller types are given in the foregoing text. The one-ton car fitted with express or stake body is to be had for $1500; chassis only, which includes hood, fenders, full set of tools, lamp and horn equipment, sells for $1400; express or stake bodies, $100. All prices are f. o. b. Menominee, Mich.

The equipment includes two gas headlights, generator, two side oil lights, tail lamp, all black enameled; jack and full set of tools.



G. V. Electrics in Six Models

THE G. V. electric motor trucks are manufactured by the General Vehicle Company, Long Island City, N. Y., and are to be had in six standard models of the following capacities: 750-lb. wagon, 1000-lb. wagon and a 2000-lb. wagon, a two-ton truck, a three and a half ton truck and a five-ton truck. A complete line of vehicles, graduated as to capacities, is very advantageous as concerns the adaptability to the needs of the purchaser.

The Motor

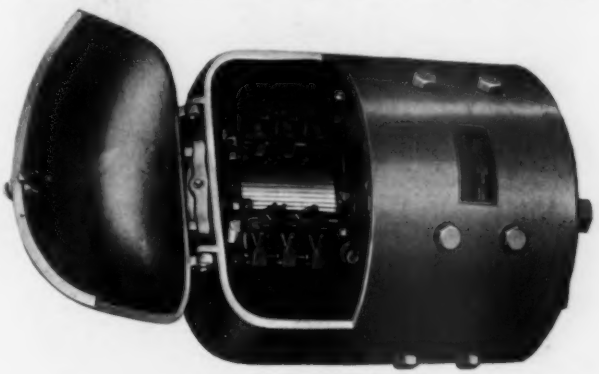
The single motor used is manufactured by the General Electric Company and has been designed to stand up under the heaviest service conditions. It is totally enclosed and suspended on a cross-bar, pivoted to the sides of the vehicle frame in the front of the rear axle. It is suspended high above the ground and is easily accessible from the rear, permitting of inspection by opening the hinged cover in the motor shell. It is equipped with Hess-Bright ball bearings, thus eliminating loss due to friction as much as possible. The brush holders are simple and durable, and the commutator segments are of such width and depth as to insure good commutation at all loads and long life of parts. Graphite brushes are used, which are strong and offer little resistance to the current. The shell of the motor is cast steel. The field pole pieces are laminated iron. The field and armature coils are thoroughly insulated and water-proof. The armature shaft is tapered and provided with a lock washer and nut for securing the pinion. The general arrangement of the motor and counter shaft is such that it may readily be inspected or replaced.

The G. V. Electric Controller

Here is shown the controller employed on the G. V. electric trucks, having four speeds forward and two reverse, with operating handle conveniently located.

Transmission

A double reduction transmission is used on all chasses. The first reduction is effected by a silent Morse chain, from motor pinion to gear on countershaft, the second reduction by roller chain from the countershaft sprockets to the sprocket on each rear wheel. The Morse chain is in all cases entirely enclosed. The gears and sprockets are made of the best steel to resist wear, and the teeth are accurately cut.



The G. V. Electric Motor

The motor herewith illustrated is of General Electric manufacture and has a removable section, which exposes the interior for inspection. This motor is hung from a cross member and drives the countershaft by means of a silent chain.

Frame, Springs and Axles

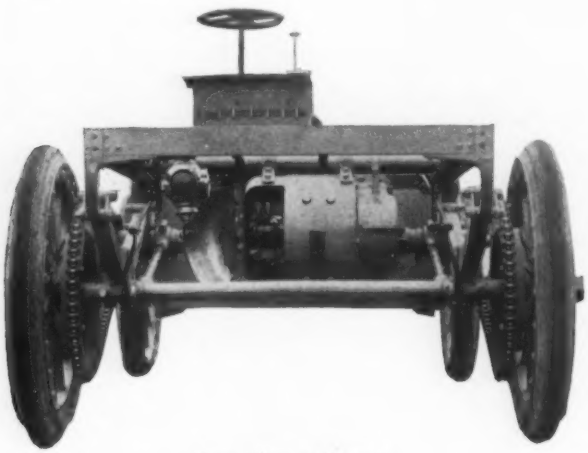
A rolled steel channel frame of such proportion is employed as will best support the mechanism and carry the load efficiently. Cross members are used to stiffen the frame; these also serve to support the motor, battery box, controller and driving mechanism. Special designed spring hangers are used riveted to place, these serving to support the shackles. Special brackets are also riveted to the frame which support the counter shaft.

Half-elliptic springs are used front and rear and are made of high-grade steel. The springs are of equal strength throughout and possess sufficient flexibility for good operation. The spring clips are heavy and the links and bolts are made of special material to resist wear.

The axles are made of open-hearth steel. A uniform size of roller bearing is used throughout the road wheels of each wagon, designed to resist the wear of usage and, if kept properly packed with grease, are said to run without end play. The axle designs used are specially adapted for heavy commercial service.

Wheels, Tires and Brakes

The artillery type wheels are mounted on Timken roller bearings, sufficiently strong for the loads they are to carry and the strains subjected to.



Rear View of Chassis

This view shows the disposition of the motor and its accessibility. Note the toggle levers, which operate the internal expanding brakes

Solid rubber tires of standard quality are used on all wheels, varying in design for the different capacities. Single tires of proper section are used both front and rear on all wagons, for light and moderate capacity. On the heavier trucks single tires are used on the front wheels, while on the rear wheel double or twin tires are used.

Countershaft and Gear Case

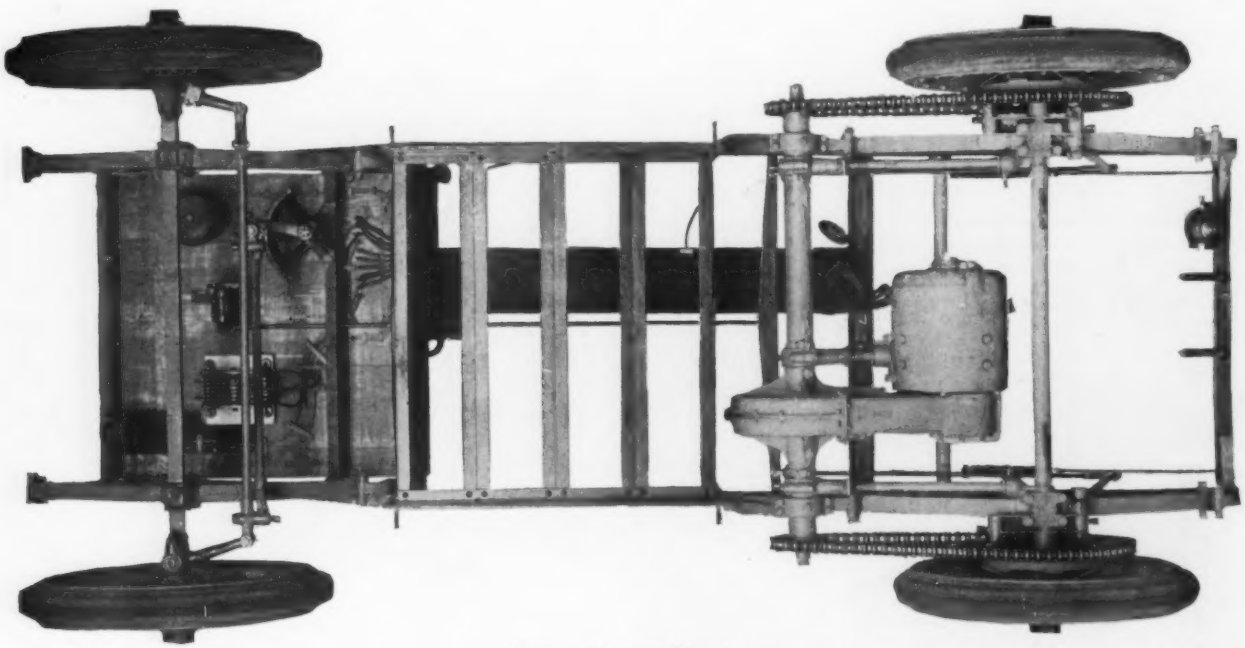
The countershaft is driven by the motor by means of a silent chain enclosed in the gear case. It is hung just forward of the motor and permits of adjustment.

Expansion type brakes are used on each rear wheel. The foot pedal is located at the base of the steering post and is connected to a long brake rod secured to the middle of an equalizing bar. A rod connected to each end of this equalizing bar is fastened to the toggle levers. The side brake rods actuate the toggle levers, which cause expansion of the brake shoes. The brake shoes are leather faced.

Storage Battery and Controller

The G. V. battery, now standardized, has battery cradles deep enough to permit the use of a high-bridged jar, two bridges each 2¾ in. high. The same size of wood and rubber separator is used between plates in all batteries, and the same density of electrolyte is also used. The rubber jars of various sizes have the same thickness of wall and the elements fit with exactly the same ease in all jars. There is enough capacity in each battery to run its vehicle for six hours continuously on level roads.

The controller is of the continuous torque type manufactured by the General Electric Company, and consists of a



Bottom View of Chassis

This illustration shows the location of the component parts of the G. V. electric truck. The method of wiring can be seen, located forward under the footboards, as is also the steering mechanism. The wires to the motor are mounted on a special board, located above the battery box and heavily insulated.

rotable insulated semi-cylinder carrying on its circumference a number of copper contact blocks, arranged to make the desired connections with the copper fingers of the controller, which are connected with the terminals of the battery, resistance and motor. The motor speeds are changed by degrees without interrupting the supply of power. The controller is located under the seat, where it is readily accessible. It has four speeds forward and two reverse, and is operated by a lever conveniently located.

The Steering Gear

The steering gear is of the well-known pinion and sector type manufactured by the General Vehicle Company and used on all models. The steering column is securely fastened to the chassis, and the tie rods to steering arms are provided with well-lubricated universal joints. Wearing parts are lined with hardened steel bushings, which can be readily replaced when worn.

LACK OF INTEREST

A flagrant lack of interest came to the attention of the COMMERCIAL CAR JOURNAL representative recently in the Middle West. Passing a new building in course of construction, the COMMERCIAL CAR JOURNAL man noticed an illuminating company's electric truck, which appeared to be afire judging from the smoke issuing from the controller box. He approached the car and smelled burning insulation and called to a lineman working on a pole. The lineman came down in a jiffy, and when the seat cushion was raised and the seat board taken out flames shot out the full width of the seat. The lineman scampered for water. Before he returned the boss of the job ran up and, noting what happened, merely said, "Ah, let it burn, that is the second time that it has done that." "Got an arc?" the COMMERCIAL CAR JOURNAL man asked. The boss looked; the controller handle was at first speed and the resistance was surely hot. The lineman eventually extinguished the fire. It will cost about $50 to repair the damage because someone was careless. That someone knew that the thing happened before, but had insufficient interest to preclude its happening again.

The Baker Electric in Service of Marble Manufacturer

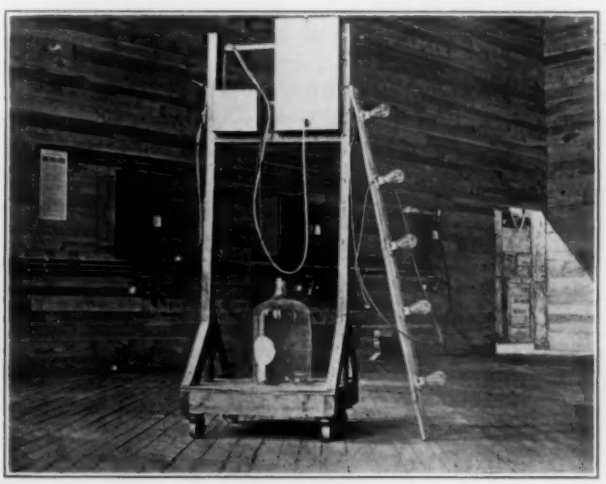
Here is shown a Baker electric one-ton truck, which carries daily from the loading platform of a large marble manufacturer in Akron, Ohio, scores of heavy cases containing glass eyes, cornelians, and plain kibbies, to the freight depot, a couple of miles away. The daily routine takes the truck up the steep north hill of Akron, which has a grade somewhat in excess of 11 per cent, which the truck climbs, heavily loaded, with a draught on the batteries not in excess of seventy amperes.

BUYING SERVICE IS MOST PROFITABLE

Though the use of electric commercial cars is on the increase and their care is not a difficult matter if it is gone at in the right manner, there are many users who look to the manufacturer's service station for maintenance of their fleets. A case in point is the Halle Brothers Company, of Cleveland

The Baker Garage

O., who operate a large dry goods store. This big concern uses a fleet of Baker electrics and has them cared for at the Baker garage. The cars are always ready and are given attention when they need it. The users own the cars, but their care and maintenance is left to the maker's service station This method is favorably regarded by many users and there is no reason why it should not prove a success. It is so regarded here.

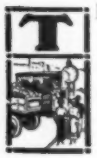


Simple But Effective

Herewith is shown a simple but effective rigging used by the garage manager of a Detroit dry goods house. Mounted on a stout frame on four large casters is a metal tank filled with distilled water. This has a rubber hose connection and filler. When the battery has become filled with distilled water, an electric bell equipped with four batteries and a relay is rung. With a positive gravity flow, this portable distilled water carrier and filler proves very successful.

NIGHT SHELTER DEPOTS for commercial motor vehicles are being arranged in various parts of England by the Commercial Motor Users' Association, 89 Pall-Mall, S. W., London.

ELECTRIC TRUCKS GIVE GOOD SERVICE



THE evolution and rapid development of the automobile has been an important factor in facilitating the transaction of business and the transportation of merchandise within cities. The automobile has almost entirely supplemented the horse for ordinary pleasure and business service, and the automobile truck has begun to displace the dray and cart horse for commercial purposes," said J. A. Cleveland, General Manager of the Saginaw Power Company.

"As a result of this development in the automobile industry a great opportunity is presented to the central stations of the country to obtain an important and valuable adjunct to their load, and from which they can derive an extremely profitable class of business. The electric vehicle is generally used during the day and evening and can be most conveniently charged during the night. This introduces a class of business which will use electrical energy during the very hours that the load upon the station is light. As a result, this business will tend to improve the daily load factor of the central station, and furthermore, as the pleasure vehicles are used more in summer than in winter the business will improve the yearly load factor as well. The current used in charging is an off-peak load, coming on at the time of the lowest point in the load curve and requiring no increase in station investment. The load is one in which there are no fluctuations. As a current consumer the electric vehicle is decidedly attractive, the consumption varying as it does from 1,500 to 12,000 K. W. H. per car per annum."

"The electrification of our city street railways marked an important step in the development of travel within cities and supplied the central station with an important consumer. The electrification of our city merchandise transportation systems now presents another consumer of great possibilities. Commercial conditions are requiring a more rapid transfer of merchandise and in our larger cities the congestion of merchandise is becoming a serious problem. The electrical system applied to trucks offers advantages over the gasoline system in many respects. Electric motors are said to be more simple in construction, and more durable and efficient in operation than the gasoline engine. Improvements in batteries during the past few years have greatly increased their efficiency. The speed of the electric truck is limited by the size of the motor and the number of cells in the batteries, and a check is thereby secured upon reckless driving which would result in disastrous accidents. Furthermore, the slower and more uniform speed prevents severe jolting of all parts of the machine and results in a lower maintenance cost."

"The successful introduction and wide use of these vehicles depends upon the education of the public in their proper application and care. An educational campaign and some expert assistance is needed so that the vehicles used may be adopted to the purpose and service demanded of them."

"In Saginaw the companies now have two electric trucks in daily use, one a 1000-pound truck used by the Gas Company as a meter and service truck, and the other a 2000-pound truck used by the Power Company as a service and line repair truck."

"It was found, however, that a 1000-pound truck was too light for the heavy loads of wire and line material and later on a 2000-pound truck was ordered and placed in operation in October. The smaller truck was then transferred to the Gas Company to be used as a meter and service truck, taking the place of two horses and wagons."

"From the day the first truck was put in operation, a record was kept showing the number of miles traveled each day, and the actual number of hours and minutes each day that was spent in traveling as distinguished from the time that the truck was standing still while the men were at work at any one location, and the number of men each day that were employed upon the work."

"The maintenance cost of the automobile truck was found to be greater than that of the horse and wagon, but the extra amount paid in wages in the case of horse and wagon operation still resulted in a saving of nearly 50 per cent. in operating costs by the use of the truck."

"Records show that the total yearly cost of the automobile truck is about 50 per cent. of the cost of the horse and wagon in doing the same work, which in this case means a yearly saving of nearly $1,000."

The following additional figures in regard to the operation of the truck during the period may be of interest:

Number days of truck operation	94
Number hours of truck operation	199.4
Average number hours per day operation	2.12
Total number miles traveled	2009
Average miles traveled per day	21.4
Maximum miles traveled per day	53.5
Average miles traveled per hour	10.08
Total K.W.H. used	768
K.W.H. used per day	8.17
K.W.H. used per mile	0.38
Energy cost per mile at 5c per K.W.C.	$ .0190
Battery renewal and repair cost per mile	.0314
Mechanical repair cost per mile	.0090
Tire renewal cost per mile	.0150
Total operating cost per mile	.0744
Total operating cost per day	1.5000

Detroit Electric Used by Packing Concern

This is a 3000 lb. car made by the Anderson Electric Car Company, which has been in the service of the Croninger Packing Company, of Shamokin, Pa., during the past year. This car handles successfully the greater part of the company's local delivery work, as well as a vast amount of hauling to and from railroad freight stations. The driver has been with the company for years and takes care of the car himself. This company considers the car an ideal machine for packing-house service. The battery equipment consists of 60 A-6 Edison cells and the tires are Firestone 34 x 3½ in. front and 36 x 4 in. rear.

An Up-to-Date Electrical Truck-Loading Device as Used by a Western Grocery Firm

IT has been mentioned many times in these columns in articles and editorials, that commercial vehicles to be most efficient must be kept continuously on the road. The time of loading and unloading must be kept at a minimum. In no instance which has come to the attention of the writer has a company gone more thoroughly into the necessary reconstruction of the interior of the plant to facilitate the use of trucks than has M. A. Newmark & Company, the well-known importers and wholesale grocers of Los Angeles, Cal.

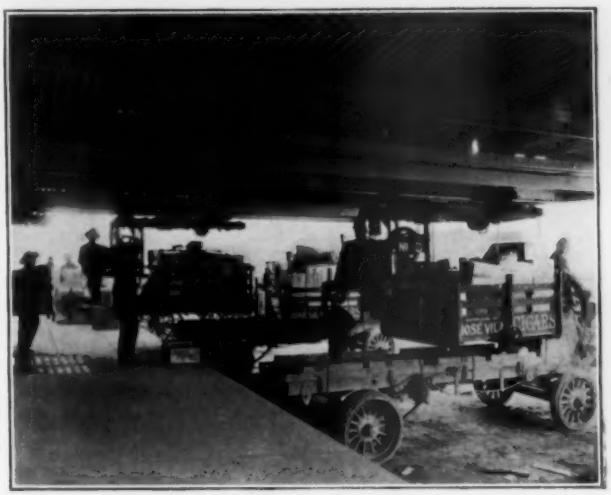
This company has been operating motor trucks for over three years, having, as usual, started with them as an experiment. Since that time they have continually added to the equipment until they are operating at the present time eleven machines. Trucks are continually being added to this equipment, the intention being to increase the fleet until horses are entirely done away with, thus allowing a uniform system of handling the goods.

Time Wasted in Loading

It was soon found that too much valuable time was consumed in loading the trucks, this being especially true in the grocery business, owing to the very diversified nature of the goods. From an hour to over an hour and a half was usually required; two loadings, consuming almost four hours. This lost time cut down the efficiency of the trucks and amounted to almost one-third of the actual working day.

The "Telpher" System

It was soon decided that a new plan was necessary, and in connection with the new buildings, by the assistance of Leland S. Rosener, an electrical engineer of San Francisco, the "Telpher" electrical loading system was installed. Reference to the accompanying photographs of the new buildings shows the awning-like projection overhanging the street. From this awning, as well as from every elevator in the building and every floor, are hung I-beam tracks from which are suspended electric man-trolleys especially designed for the needs of Newmark & Company. These trolleys are suspended frames with a man-carrying platform at the rear, each individually electric motor operated. Boys are usually used to run these overhead trolleys, each of which carries suspended by wire cable especially built bodies of the stake variety, two of which form a complete truck body. Each of these is fitted with two small cast-steel wheels at the center, these being permanently attached and permitting the cage or section of the body to be wheeled about on the floor like a hand truck. These trolleys can run from any floor directly on to the elevator and off again at any floor, or out under the before-mentioned awning, extending above the special truck chassis where the body sections are lowered into position on the truck. Incoming freight is also handled in the same way, saving a vast amount of time.



The Half Bodies Being Placed in Position on the Trucks

The extended overhead canopy is here clearly shown. In the foreground is seen a half body just ready to be lowered into position on the truck, and in the background another truck just about to receive the second half of the body, thus completing its load.

The half bodies are loaded at their proper places on the various floors, traverse the trolley system to the shipping platform, and two of them form a complete truck body and load. Upon the return of a truck the empty halves are rapidly taken from the machine and replaced by extra loaded halves, the entire operation detaining the truck but from four to ten minutes, which for the character of the goods handled and the size of the plant is nothing less than remarkable.

This is said to be the first installation of its kind in this country, and Newmark & Company estimate that they have by this system increased the efficiency of their motor trucks thirty-three and one-third per cent. It is expected, before the

Panoramic View of M. A. Newmark & Company's New Concrete Plant and Motor Vehicles

This photograph shows the vehicles used in the delivery of groceries by this progressive Pacific Coast firm. The electric "Telpher" system, which permits of loading a truck in from four to ten minutes, is employed, this being the first installation of its kind in this country

Loading Platform Showing "Telpherage" System in Operation

In the foreground is seen one-half of a ton body loaded with brooms, and operated by the boy on the platform at the rear. Following it is another half, carrying soap; the overhead trolleys are on all floors and elevators, so that goods can be quickly transported from any floor to the elevator, from thence to the basement and any other floor, or to the trucks.

expiration of six months, that all the horses will be eliminated. When it is considered that this means commercial vehicles for short as well as long hauls, there is food for reflection on the part of many New York, Chicago and Philadelphia grocers and others in large cities.

By this system it is possible for each motor-driven truck to handle from twenty to twenty-five tons a day, as against ten to twelve tons by the ordinary two-horse truck. Three and a half and five-ton G. M. C. and Reliance trucks are employed in the service, these machines being used not only for city delivery but in hauling local incoming freight. This, however, owing to the efficient system and the speed of the trucks over horses, occupies very little time and the trucks are again free for city deliveries. The trucks start at seven o'clock in the morning and work until five or five-thirty, or until such time as the loads are delivered. The drivers receive $3 a day and the helpers $2, and both are paid extra for overtime. On the large trucks, however, there are no helpers, the drivers handling all the freight at the depot.

Cost of Operation

The actual cost of operation covering a period of a month, including every possible expense, drivers' and helpers' wages, etc., depreciation at twenty per cent. per year, amounts on the three and a half ton trucks to $280 per month, and on the five-ton trucks to $220 per month, the trucks averaging about ten hours' work per day. The machines are cared for in their own garage, in connection with which a regular repair shop is operated by a competent repairman. Each truck is thoroughly looked over on an average of once every two weeks, and at least one extra truck is held in reserve should any one of the regular machines be laid off. No fining system is employed with the drivers, nor are they held responsible for minor accidents, but when damage occurs through careless handling they are usually let off, this being the only method so far employed.

The system is working to the entire satisfaction of the company, and is a unique example of what can be accomplished by the use of motor-driven commercial vehicles where the internal arrangements of the business are so readjusted that the trucks can work to their best advantage.

WHAT, GO BACK TO HORSES? NEVER!

Sharon Jones, of the Jones Hardware Company, Richmond, Ind., was inclined to believe that the COMMERCIAL CAR JOURNAL representative was joking when he asked if the firm would ever go back to horses. "What, go back to horses? Never!" was his response.

The firm is using three cars, a two-ton Grabowsky and two one-ton Buicks. Sharon Jones states that the firm could not do without trucks and would not do without them. They are doing very satisfactory work.

Use Trailers

A feature of the Jones service is that trailers are used to very good advantage. Despite the fact that the freight yards are across the street it is stated that the two-ton car can, by hauling the trailers, do very effective work. The system employed is multiple, that is, when one trailer is being drawn to the store house another is being loaded. It takes but a moment to drop one and take up the other. Sometimes when the occasion demands it Mr. Jones states that he has used two or more trailers. A picture of one of the trailers, as it was coming from the Pensylvania freight yards, is here shown.

Fifty Cents a Day

"What is the cost of delivery?" asked the COMMERCIAL CAR JOURNAL man. "Fifty cents a day," said Mr. Jones. "Outside of drivers and labor, the average cost per day has been fifty cents. This is for two years. It will cost one dollar per day for a horse. The only trouble experienced was when the car was backed into an elevator well. It cost $700 to fix it, but that was not the fault of the car." Either one of the trucks, Mr. Jones asserts, will displace four teams and four men. When asked what the entire cost of car would be, taking into account insurance, depreciation, tires and any of those items which would be necessarily charged against it as a fixture of the business, Mr. Jones replied that $7 a day would cover every cost. The two-ton car has been operated 10,000 miles a year and is used summer and winter. No difficulty is experienced in deep snow.

Trailer Outfit Used by Sharon Jones

Commercial Cars More Economical Than Horses in the Service of Contractors, Regardless of the Length of Haul

Notable Examples in New York and Philadelphia of Truck Adaptability

IN some kinds of business, the trans-shipment or transportation of goods is more or less a secondary or auxiliary part of the work. Although important, it is not primary; in such cases hauling is usually looked upon as a necessary evil, which costs so much anyway and must be tolerated. Earnest effort on the part of the members of such firms to cut down the expenses of this part of the business are not as apt to be made, as where the moving of the goods is material and constitutes the main feature of the business. Again, where the hauling is of secondary and minor importance, or at least so considered, the cost records are apt to be inaccurate, or including insufficient detail, or otherwise prove more or less valueless. Where the hauling is the chief consideration the cost is usually very carefully kept, and the records take into consideration everything. More importance should therefore be attached to the results shown by commercial cars in the service of teamsters or those who make a business of moving material, than to the performance of trucks in the other lines mentioned. It is, therefore, with pleasure we are able to present instances in which motor trucks are showing the greatest and most marked economy over horses in exactly the same kind of work. Such examples of motor truck economy are by no means rare, but the results are often difficult to obtain for publication, and in other cases a longer time is desired to obtain that much disputed item, depreciation. The current practice in this regard, however, seems to favor placing depreciation at from twenty to thirty per cent., just to be sure of being on the safe side, so that in nearly all of these data this item is included at a greatly exaggerated amount. It has been the experience of the writer that the concerns which have used trucks the longest always place depreciation lowest. It is the beginner who is afraid, and wants to be sure he does not underestimate it, who figures the depreciation on a gasoline car at thirty-three and a third per cent.

Gas Trucks Show Marked Economy Over Horses on the Same Job on a Half-Mile Haul

It has been repeatedly said by so-called experts, that the gasoline commercial car could never compete with horses on hauls under two to three miles, and others have placed the figure at even as high as five miles. Here, however, is an instance of an installation of sixteen Packard trucks in use by the well known New York contractor, Oscar Daniels Company, where the haul is only one-half mile in length, and horses are employed on the same work under exactly similar conditions, yet the trucks are showing a very appreciable saving over horses. The work is hauling dirt from 116th St. and Lexington Ave., from the excavations now being made for the new subway, to the foot of East 110th St., a distance of not over one-half mile. These trucks were put in service November 1st, last, and are garaged by the Oscar Daniels Company. The drivers are experienced men supplied by the Packard Motor Car Company.

Very accurate records have been kept of the performance of these sixteen three-ton trucks. It is found that the teams do not average over twenty miles per day, while the trucks average thirty, which means approximately thirty round trips. This is possible owing to the fact that the dirt is shot into

Three-Ton Packard Trucks in the Service of the Oscar Daniels Company, of New York

the trucks from an overhead staging with hopper, and that the load is discharged by means of a dumping body, but the trucks have no advantage here over the horses, as they are employed with dumping body wagons, which are loaded in the same way as the motor trucks. The trucks carry about three cubic yards of dirt, as against two on the horse truck.

Accurate Records Kept

On the records, interest, depreciation at 20 per cent., fire and accident insurance, interest on investment, garaging, repairs, tires, gasoline and oil, and driver's wages, are kept, in fact every item which could possibly enter into the cost, and it has been found that averaging over the entire period of nine months, that these trucks cost but $10.50 per day to operate. Repairs, replacements, etc., have not averaged over 50 cents per day, per car. This is a saving of one-third over what the same work can be done for by horses under exactly similar conditions; in other words, here is an installation of commercial trucks on a short haul of one-half mile saving thirty-three and one-third per cent. over doing the same work with teams.

Secondhand Truck Shows Economy in Hauling Pipe for Croton Aqueduct

The Snare & Triest Company, contracting engineers, No. 143 Liberty St., New York City, purchased for the special work of hauling large steel pipes for the Croton Aqueduct, a seven and a half ton Hewitt truck. These pipes are of steel nine feet six inches in diameter, and average from four and a half to seven tons each. The truck was operated over some very stiff grades in the neighborhood of Peekskill, and in Newburg. The truck had previously seen hard service, being used on a suburban express line, but was used with the greatest of success for over two years on the Aqueduct work. Depreciation was not taken into consideration, but a large saving was shown, as the truck operated at a cost of about $1.00 per ton for the haul of four miles over these mountainous roads, and the work could not be let out by contract to anybody for less than $2.00 per ton. The contractor figures they saved about $3,000 on the work the truck did, but said that this was nothing as compared to the fact that the truck got the pipes to the work in time, so that the workmen were not held up, as was the case when the hauling was attempted by horses. This resulted in a total saving on the job, which it would be difficult if not impossible to estimate.

Contractor Uses Half a Motor Truck

The Clarence L. Smith Company, 11th Ave. & 30th St., New York, decided to try electric trucks for hauling stone. They arranged with the president of the Couple Gear Company, of New York City, to use a four wheel driven electric Couple Gear truck. The man in charge was an old horseman. He wanted to make sure whether it was any good or not, so he piled on 2600 bricks. He said it would have taken four horses to start it on the hill where the test was made, but the truck carried it easily. Another test was made with seven tons on the truck, and eight tons on an ordinary three horse truck used as a trailer, making 15 tons net, and the load was carried without difficulty over the hills and up to 146th St. At one time during the test on the 79th St. hill, with a load of eight tons, a three-horse team also fully loaded was encountered, stuck. The truck was backed up to the three-horse team, and notwithstanding its eight ton load, pulled the three-horse team load and all out of the hole and up to the top of the hill. After this performance, the horseman looked at the machine and said, "That thing has too much power, I think two wheels is all we'll need." As a result of this remark the experiment was tried of using an ordinary five ton stone wagon from which the front wheels were removed and replaced by the two front wheels and the axle of the Couple Gear truck. A battery box containing forty-four cells was slung under the body of the wagon, after the usual electric truck construction, and this truck is now in active service. It is rated as a five ton truck, but often carries six tons, and on an exceptional occasion has carried eight. The rear wheels, of course, are steel tired, while the front wheels are the usual Couple Gear type, sheet steel with a three horse power motor in each, driving through a 25 to 1 reduction by spur gears within the wheels. These wheels are operated in the usual automobile steering knuckle fashion, and although a front wheel drive, there is no mechanical complications, owing to the fact that the motor and driving mechanism is entirely within the wheels. The "Philadelphia" battery consists of forty-four cells of twenty-seven plates each. It is good for twenty-five to thirty-five miles over the rough pavements and soft ground which, the hauling of blasted rock, or derrick stone, as it is called, necessitates.

The machine is now hauling derrick stone, about five to six tons each load. This consists of three large rocks. The horses could carry but two, and made eight trips against the trucks' twelve trips to 45th Street and North River, a comparatively short haul. From this it is seen that the trucks run about one-third faster than the horses, and carry at least one and a half as much as the two horse team, so that their total work is equivalent to that of two two horse teams. Figuring the cost per day of a two horse team at $6.50, the truck costing between $8 and $9 per day is doing work which would cost $13 to do with the teams.

PITTSBURGH TO HAVE MOTOR PATROLS

The Police Department of Pittsburgh, Pa., has ordered six automobile patrols which will soon be placed in service. Ten wagons and 24 horses will be replaced by these machines. One motor patrol will, in some instances, answer the calls of several police stations. The installation of motor trucks may be extended to the department of fire, to displace the horse-drawn fuel and supply wagons.

THE DETROIT LUBRICATOR COMPANY, Detroit, Mich., has recently brought out a new general catalogue. This book contains 232 pages of information regarding Detroit products of all kinds, such as force feed oilers, grease cups, etc.

The horse is cheaper than the auto and a goat is cheaper than a horse—But!

Commercial Cars for Peace and War

The British War Office's New Subsidy Scheme

BY OUR FOREIGN CORRESPONDENT

THE writer has received a communique from the British War Office authorities, giving final details of their scheme for subsidizing patrol driven motor lorries in the United Kingdom. For this purpose they are divided into two classes, of 3½ tons useful load capacities.

Some time ago it was pointed out that, different as were the conditions and requirements in the various parts of the British Empire, it might be quite possible to design a type of motor truck suitable alike for all, and that as such a machine would lend itself to military requirements in Europe, it might have advantages at home. The subsidy scheme just announced by the British War Department embodies the first practical attempt towards this ideal. The scheme is in fact something more than a project of subsidizing for national defence; it is an attempt at standardizing, or at any rate at uniformity. In fact the War Office frankly states that the two main objects of its specification have been to make the manipulation and control of all vehicles the same and to minimize the number of spare parts to be carried. The mechanical specification calls attention to a good many little points of interest to designers.

Mechanical Particulars

Briefly a four-cylinder engine driving through a four-speed gear box to a bevel drive on the live axle is specified. Chain and worm drive are apparently barred, with a clearance of not less than 12 in. on new tires in both classes while a greater clearance would be preferred. The cylinders are to be cast in pairs, and all valve stems which must be operated are to be enclosed, while ample sized inspection doors, quickly detachable, to give access to the big end bearings must also be fitted to the crank chamber. Except where ball bearings are used on crank shafts the lower portion of the crank chamber must be removable without disturbing the main bearings. Rods, not wire, are specified for all engine control connections and all engines are to have governors, keeping the speed down to 1000 r. p. m. High tension magneto ignition is specified and a spare magneto is to be carried.

Radiators must be carried clear of the frame on trunnions at the lower end, while the areas of the water passages have been standardized, and are large enough for Thermo-syphon circulation.

In both classes thirty-gal. petrol tanks are stipulated, while the size of plugs, valve caps, filter, position of inflow and outflow and the diameter and length of tank are standardized. At the inlet a filter gage has to be provided besides the filter in the supply system, and means must be afforded for cleaning out the tank.

Positively driven pump lubrication is specified with sufficient oil capacity for 200 mi. with car fully loaded. Even the size of grease cups is standardized. Gate change is necessary with a safety catch on the reverse. The driving power of the wheels is not to be transmitted from the rear spring, but preferably by an enclosed propeller shaft with a combined radius and torque member, universally jointed at the front. Steering must be arranged so as to give 38 deg. movement on either side of the longitudinal axis. Even the position of the control pedals and hand levers are specified. Curiously enough roller bearings are barred, and only certain standard sizes of ball bearings are to be carried in the field. Four towing hooks, two at each end, have to be attached to the frame.

In the three-tonners the minimum wheel base allowed is 13 ft. and for 30 cwt. trucks 10 ft. base, while the platform area must not be less than 12 ft. x 6 ft. in the first case, and 9 ft. x 5 ft. 6 in. in the smaller vehicles. The front seat must not only be wide enough to carry the driver, but two men on his left as well. Bodies are to be interchangeable, and the type to be accepted by the War Department should have detachable sides not less than 2 ft. high with a frame for overhead cover, but a certain number of box bodies will be accepted. If the body employed by the owner does not comply with requirements, he will have to get a spare one that does.

The Financial Proposition

As far as the business side of the proposition is concerned the War Office undertakes to pay a purchase premium of $250, and if the truck is fitted with a body of an approved type suitable for the carriage of meat slung from the roof an additional purchase premium of $50 in addition to an annual subsidy of $100 per truck. All these payments are to be made half yearly in arrear, the first installment being handed over six months from the date of the acceptance of the truck. Thus in three years the owner of a subsidized motor wagon would receive $600 if his car was of the meat carrying variety, or $550 if otherwise. In return for what they give the War Office has the right of purchasing, if any portion of the Army Reserve be

called out on permanent service—in other words, practically if war break out, and on receipt of a telegram or other written notice of purchase the owner shall deliver the truck by road at the place specified within seventy-two hours. If, however, the car is more than 200 mi. from point of delivery, an extra 24 hrs. is permitted for each additional 120 mi. The value is arrived at by deducting from the original purchase price 7½ per cent. for each half year or part of a half year that has elapsed since its delivery by the manufacturer for purchase, and then adding 25 per cent. of the result so obtained; but if this figure exceeds the original price, then only the original price is paid. For instance, if a $1000 truck was purchased within the first six months of its enrollment, depreciation would amount to $75, leaving $925; to this sum would be added another 25 per cent.—$231.25—making in all $1156.25. As this exceeds the purchase price only $1000 would be paid, but if the truck had been in use for three years, the depreciation would amount to 45 per cent., leaving $550 plus 25 per cent., which makes a total of $687.50. That would be the purchase price of the vehicle after three years.

All subsidized lorries shall be subject every six months to an inspection in garage or on the road fully loaded, but as arrangements will be made as far as possible to carry out this inspection during the ordinary routine of the vehicle's work, no reimbursement will be made. If a car is considered unserviceable then the owner must put it in satisfactory condition within a reasonable time before receiving any further subsidy payments, and if it fails at more than one inspection the War Department will be entitled to strike it off the list and the owner forfeits all further payment.

The scheme is not confined to owners, but also manufacturers, and accordingly the War Department inspectors shall have the power of inspecting their works of any manufacturers of approved makes, and to check the interchangeability of parts besides as far as practicable, inspecting the trucks under running conditions; also, they can order repairs to be executed if the car is not in proper running order.

The British War Department scheme, if it can be carried through, ought to do a good deal for the industry in the United Kingdom, and if they can enforce the standard of uniformity which they seek, they will have been the cause of a very definite progression in utility automobile construction.

ENGLISH MOTOR TRUCK SOLID TIRE SIZES AND MILEAGES

The following table gives particulars of tire dimensions on leading British motor truck and wagon chasses and also the average actual mileage obtained from the tires in every day use, with the average loads carried going and returning and the service engaged in. The mileage figures as given in the accompanying table, are in all cases the averages of three sets of tires on each size of vehicle; that is, the mileage shown as the result of using a particular size of rubber is the figure obtained from wearing out three sets of six rubbers, or eighteen tires in all. These results are all from vehicles used in actual service—not from manufacturers' demonstration machines—and have come from two or three vehicles each of the same make and load capacity in the different sets of results.

All mileages given are for the band type of tire. The figures are from records kept on the services of large business concerns. (In making comparisons with American vehicles it should be remembered that English motor trucks are rated in long tons, equivalent to 2,240 lbs.)

KARRIER CARS

Capacity Rating (tons)	Tire Sizes Front Single (in.)	Tire Sizes Rear Twin (in.)	Mileage per set of six tires	Loads Carried Out (tons) About	Loads Carried Return (tons)	Nature of Work	Where Used
1	32x3	32x2½	21,700	1¼	¼	Ry. parcels del.	London
1½	32x3	32x3	19,867	1½	¾	Liquor Delivery	London
2	32x3½	36x3½	22,180	2¼	1½	Cotton tranp's	Provinces
2½	32x4	36x4	17,360	2½	¾	Gen'l hauling	Provinces
3	32x4	36x4	15,841	3	?	Oil t'k wagons	Provinces
4	32x4½	36x4½	16,180	4¼	3½	Cotton transp't	Provinces

LACRE

1	34x3	34x2½	23,200	¾	¼	Drapery & furn.	London
1½	34x3½	34x3½	16,870	1½	1½	Carpet cleaning	
2	34x4	34x4	18,740	2	2	Carpet cleaning	
3	34x4	34x4	15,460	3¼	Empty Haul. cases from docks		
4	34x4½	34x5	21,863	4	2¼	Gas hardw'e & supplies.	
5	34x5	40x5½	16,910	5¼	1½	Building material	

LEYLAND

1	34x3½	34x3	24,670				
1½	33x4	34x4	21,721	1	½	Mineral water	Provinces
2	33x4	35x4	17,102	1½	¼	Furniture del'y	London
2½	33x4	36x4	17,008	2	1¼	Bottled beer	London
3	33x4½	37x4	15,200	3½	2	Bottled beer	London
4	34x5	40x5	16,800	4	2½	Beverages	
5	34x5½	40x5½	15,060	5	4½	Beer and cotton	
6	34x6¼	40x6¼	15,780	6¼	2	Barreled beer	

COMMER

1½	32x3	32x3	20,900	1¼	¼	Paper	
2	32x3	32x3	15,840	2	¾	Gas hardware	London
3	34x4	34x4	16,974	3	½	Provisions	
4	34x4½	34x5	15,602	4	1½	Furniture	
5	36x5½	40x5	16,002	5	3	Building materials	
6	36x6	40x5½	14,865	5½	2¼	Contract haulage	
7	36x6¼	40x6¼	12,304	6½	3½	Gen'l haulage	Pickfords

BELSIZE

1	32x2½	32x2½	18,885	1¼	¼	General haulage	
1½	32x3½	32x3	17,570	1½	1½	Cotton transport	
3	36x4½	36x4	16,975	3	1½	Machinery transport	
5	36x5½	36x5	14,090	5¼	4½	Cotton transport	

HALLFORD

1¼	34x3	36x3½	17,508	1¾	1¼	Laundry delivery	
2	34x3	36x3½	14,986	2	1	Boots and leather	
2½	34x4	40x4	16,808	2½	1¾	Contract haulage	
3	30x4	40x4	13,962	3	2	Gen'l contract haulage	
4	30x4½	40x4½	14,670	4	2	Bottled beer delivery	
5	32x5½	40x5½	16,680	5	1½	Barreled beer delivery	

BRITISH TRUCK SUBVENTION

During the latter part of August and the first part of September the British War Office has been running a series of trials with three trucks, built to comply with the requirements that they have recently laid down for subventioning commercial cars. These are two three-tonners, one each, by Thornycroft's and Leyland Motors respectively, and a 30 cwt. truck by the latter firm. Working from Woolwich they are being driven on an average of about 90 miles a day over the stiffest hills that can be found in the neighborhood, until they have completed 2,000 miles. It is a little bit difficult to see how any large purposes can be served by such a test, although, seeing that the vehicles are of a new type, it is possible that a few minor points of weakness may come to light in the course of a 2,000 mile trial.

The British War Office are also establishing a "special reserve," which drivers are to be invited to join. By way of retaining fee they will receive $20 annually, while, though

they are not called upon to undergo any military training during peace, they are thus assured against the unemployment that will inevitably occur during war time.

Owing to various reasons, chief among which is the difficulty of obtaining the big Olympia building in the spring, the British commercial vehicle show has been put back from March to July of next year. Another influence making for this change has doubtless been the desire to wait until as many visitors as possible from the Overseas Dominions and Colonies are in London. Although the date is not quite definitely settled, the Show will probably open about the 19th of July.

Twelve different makers of vehicles have been successful in getting their machines sanctioned for sub-vention in the recent French military trials. These represent 40 different cars out of 66 entered. The following are the names of the successful firms: Aries, Berliet, La Buire, Clement-Bayard, De Dion-Bouton, Delaugere et Clayette, Latil (front wheel driven), Motobloc, Panhard-Levassor, Renault, Saurer, Schneider.

The Berliet firm is to be particularly congratulated, no fewer than eight of their machines having been successful.

Some extensive trials of commercial cars were carried out by the Russian War Office between the 17th and 30th of September. These included two classes of vehicles, of 1½ and 3 tons useful load capacity, the same as the British War Office. The chief makers entered were French, German and Swiss firms.

"Guarantees" From the Viewpoint of the Motor Truck Salesman

BY A TRUCK SALESMAN

UCH has recently appeared in print relative to the guarantee drawn up by the commercial motor vehicle committee of the National Association of Automobile Manufacturers, but only the truck builder's standpoint has so far been brought out. Like all subjects open to debate, the subject of truck guarantees presents two sides, that of the manufacturer and that of the user, and it remains for the salesman to satisfy both parties to the bargain. Possibly owing to the strange fact that as a class the builder is far from being well informed as to the requirements and demands of competition and trade, he can see no reason for bringing up any objection to the form of guarantee he may adopt, but the man on the firing line from long and sad experience knows only too well what a stumbling block this is in every sale, particularly if the deal be with a firm which is about to invest in its first machine. In this case, more often than not, every "the," "an" and "a" in the form of sales contract is carefully read over and many are the objections which have to be smoothed away.

While in general business practice a simple order form is used in booking a bill of goods, it seems to have been thought necessary by the Christopher Columbus of the automobile trade to draw up a form of sales agreement which would stump even a Philadelphia lawyer to understand, and this idea has been faithfully followed by all engaged in the industry. Now it is proposed to incorporate in this voluminous legal document (sales contract) a form of guarantee requiring several pages of fine print and containing more exceptions than the early editions of Brown's high school grammar; certainly the truck salesman who can satisfactorily explain the thing, and at the end, convince the purchaser that the said guarantee is reasonable and in justice to both parties, must be endowed with more grey matter in his head than it has been the habit of manufacturers to employ in the past. Some years ago, it was quite the order of things to experience trouble every time you went out, with the carburetor, magneto, plugs, coils, tires, wiring and a host of other small parts which are not built in the truck factories, but represent the product of special manufacturers, and after acting as a go between for the truck owner and the parts maker till human endurance had reached its limits, finally adopt a form of guarantee which saddled such troubles upon the original manufacturer. Time has, however, brought about a surprising change in this condition and today it is exceptional to have even slight adjustment trouble with coils, magnetos, etc. This being a fact, it is about time that the truck builder be willing to assume the responsibility for the perfect working of all accessories, which are largely covered by their maker's guarantees, and be willing to give the purchaser of his vehicle a broad liberal binder covering the entire truck as a complete working unit, with the possible exception of tires. The intending purchaser can not feel that the maker has much, if any, confidence in his product if, as far as he can judge with his limited knowledge, nearly every portion of the truck is excluded from the guarantee and what is covered must be shipped half way round the globe at his expense before any effort will be made to make replacement. Again, each maker stipulates in his literature that such and such a make of accessory is used and that he will not be responsible if any change or alteration in this arrangement is made, right back at the salesman comes the statement—if you will only furnish me with a machine designed as per your specifications, you must assume all responsibility and guarantee each and everything in its construction otherwise I will not buy. And let me tell you that he will not; the purchasing public is not running after the motor truck manufacturer. Quality of material and design and honesty of production and sale alone are the factors upon which motor trucks are sold today.

Where vehicles are handled properly and sold honestly, without misrepresentation or exaggeration, there will be little resort to the guarantee in the contract, be it limited to three months or a year; as a matter of record and interest, it can be said that in the city where the greatest number of machines are sold and used, the dealer who has the briefest (one line only) and most embrasive form of guarantee, experiences less trouble than any other.

The Car Service Department*

A PHASE of the automobile business which is bearing more strongly on the automobile manufacturers every day is the fundamental effect the agency repair service has on the present and future sale of their cars. Those companies which can point to that very practical monument for the future welfare of the purchaser, a fine car service building, with its efficient organization, stock sub-stations and systematized agent repair shops, have an assured future. The function of the car service department is to take care of the cars after they are sold; to supply repair parts; educate repairmen; supervise the character and extent of agents' repair shops and policies; settle claims for defective parts, and operate a local branch for repairs, etc. At first the car service division originated from necessity, little departments sprinkled around the factory. As their work in time grew, it became necessary for efficiency to unite them in one building, working together co-operatively, instead of encumbering the routine of the factory.

Outline of Duties of the Car Service Division

ORDER DEPARTMENT

General foreman of car service
- "A" Repair stock
  - (1) Manufacture and storage of repair parts.
  - (2) Handling, packing, shipping.
- "B" Claims
  - (1) Receiving and cleaning of specimens.
  - (2) Investigation and judgment.
  - (3) Storage.
  - (4) Adjustment, allowing stock or credits.
- "C" Educational
  - (1) Class room. Models, Car and instructor.
  - (2) Compiling of instruction book. Educating agents' men. Answering technical queries, and directing apprentices in repair and shop work.
  - (3) Traveling repair organizer and overseer.
- "D" General repairs...
  - (1) General repairing and over hauling, shipped in from outside.

(1) Records, lists, prints, etc., of parts, tools and material. Pricing

(2) Ordering, accounting and maintenance of repair stock

(3) Correspondence

(4) Ordering of shop, Outside repairing and extra work

Organization of the Car Service Division

General foreman of car service division

(1) Order clerk

(2) Stenographer

(3) Stenographer

(3) Records man

(4) Accountant

(5) Typewriters

(6) Errand boy

"A" Repair stock foreman
- (1) Manufacturing foreman.
- (2) Stock renewal man.
- (3) Order clerks.
- (4) Order checker.
- (5) Packer.
- (6) Shipper.

"B" Claims foreman
- (1) Clerk.
- (2) Handyman.

"C" Instructor
- (1) Traveling overseer.

"D" Repair shop foreman
- (1) Repairmen.
- (2) Repair apprentices.

The Order Department

The ordering of repair parts, claims, educational work and shop car service require a large number of considerations, such as interpreting of letters; credits; collaboration with sales; manufacturing and engineering interests, coupled with the collection of records, prints and history of old models; pricing and maintenance of stock; correspondence; accounting; centralizing of information and responsibility, etc., so that all incoming orders are sifted through the broad consideration of the order department into the efficient routine channels of the service department, and accounts rendered for collection, grouping practically all the clerical work in one room under a systematic routine.

A—Repair Shop

The main requirements in connection with the Repair Parts Stock are that the parts be reliably and promptly supplied, properly ordered, equitably priced, and interchangeable. Two or three sub-stocks for storing, at suitable shipping distance, are necessary for promptness, as very few agents can finance a complete stock which in several cases runs as high in price as $50,000.00. These sub-stocks should be located in, say, San Francisco, New Orleans and Jacksonville, to shorten time and express charges. This is very important as agents often make up quantities of questionable repair stock themselves on account of the expense and time required for emergency shipment.

With proper listing, ordering and maintenance, the matter of storage, handling, packing and shipping is a simple routine proposition. Compact and well-preserved storage, with quick up-to-date handling facilities and an index for location are necessary.

Owing to the large cost and bulk of the repair parts it is necessary to be continually manufacturing stock. By making the repair parts in a regular repair parts shop and concentrating the tools, machinery, records and experience on this work the problem is settled. However, a certain amount of surplus stock can sometimes be made to advantage in the main factory in slack moments; instead of laying off or slowing up the organization, quantities of surplus stock can be very profitably made.

As time passes and men whose minds are storehouses of facts leave, the lack of thorough records, generally neglected in the rush days of the industry, calls for a thorough supply of drawings, lists and records of supersedence, interchangeability, etc. All the plans, tools, and a wisely estimated stock of the special materials and intricate process, parts and assemblies made by outsiders should be brought and stored when it is suspected that the supply of such repair parts will be neglected or stopped in the future.

B—Claims Department

The Claims Department of an automobile factory is distinctly an item of expense, but a necessity; and when equitably and diplomatically managed makes a quiet bid for happy loyal owners. Primarily the agent handles the claims on weak and defective points and replaces or allows on the parts at a uniform standard figure and policy, set by a conference of the head officials of the factory. The claims on parts are then sent to the factory claim agent for formal examination and adjustment. Undue lack of uniformity in dealing with agents or owners is sure to react. The claims expert receives the correspondence and specimens on which allowances and replacements are asked for. They are cleaned up, analyzed, judged and adjusted by credit or replacement through the order department.

C—Educational Department

The educational work is, first, to supply trained repairmen, and post agents and their foremen on new models; also

*Paper contributed by C. Roy Matson, at the September meeting of the Society of Automobile Engineers.

to oversee and develop agents' repair shops to a high standard. Of course, this work is a direct expense, but when really productive pays indirectly many times its cost.

The instructor, a thorough man in both general information and the lore of the car, with teaching and managing ability, has a classroom with sectional models and a car with which to demonstrate. His duties are to conduct and oversee the educational work, answer all technical queries sent to the factory, and to develop the Instruction Book; also to confer with or direct a traveling repair overseer.

The most satisfactory repairmen to educate are those picked out by the agents as personally agreeable, of suitable managing ability and mechanical resource, but lacking knowledge of the thorough and systematic methods that can be acquired only at the factory.

The traveling repair shop overseer, a congenial, yet very thorough and broad man, spends a few days on his circuit in each agent's repair shop, and by his information and recommendation brings things up to the minute. He ascertains whether all the shops are making solid friends for "The Car," and reports difficulties peculiar to local conditions, and practical information that he digs up for the factory to consider. The ignorance and shortcomings of some of even the largest shops are appalling.

A book outlining the general repair procedure on the various models is very helpful. By having the factory educational work done during the winter and at the start of each season, and the traveling overseeing of shops during the summer and fall months, one man can handle the entire program easily.

D—Car Repair Department

A certain amount of repairing that agents are not equipped for calls for a repair department. This department is generally located conveniently on the ground floor of the service building. The overhauling work and smash-ups sent in by some of the agents not equipped for big jobs makes this duty unavoidable; and it offers a very good opportunity for educating repairmen under the direction of the Educational Department.

LONG-FELT WANT SATISFIED

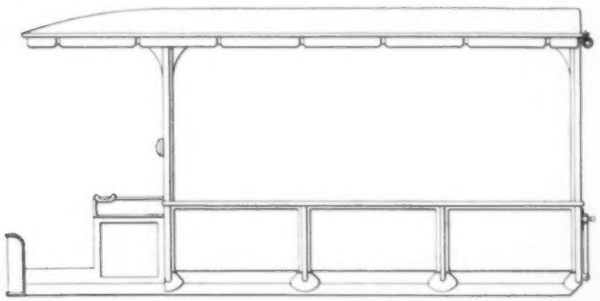
A criticism heretofore aimed at gasoline cars by various owners of mixed fleets was the necessity, or supposed necessity, of keeping the engine running while the car was discharging load. Now this might appear to some to be a very small item, but with gasoline at the present price and many cars in service there is no sense in burning it needlessly. One user of both gas and electric cars told the COMMERCIAL CAR JOURNAL representative that in his opinion the gas car would have to be improved as regarded stopping and starting of the engine before it would be the equal of the electric. In his special service a lot of sense was contained in that criticism. When a driver is some distance from headquarters he is never fussy about shutting down the motor but allows it to run. While the car is still this means unnecessary wear on all parts, useless fuel consumption, to say nothing of shock imposed on the whole chassis by vibration. In some services allowing the motor to run in this fashion is wanton.

But to consider the above criticism, that no longer holds, for now one may start a gas motor whenever he desires, assuming that it is in proper working condition, by means of any of the various self-starters now on the market. These comprise three types in general: gas, air and mechanical. With a combination electric unit in which the engine is run by the electric motor it is bound to start. It would appear that such a device would soon pay for itself.

Motor Truck Displaces Teams
Sampson five-ton chassis is here shown, with a 1126 gallon tank, which does the work of sixteen mules, for the A. F. Gilmore Oil Company

PRESSED STEEL COMMERCIAL CAR BODIES

The Edward G. Budd Manufacturing Company, Philadelphia, Pa., is the manufacturer of all steel, commercial car bodies said to possess extreme strength, be light of weight and have graceful lines. The bodies are built of hollow pressed steel parts, which are electrically welded; thus the framework forms a unit, practically one piece of steel, without joints or seams. The panels are either electrically welded in place or hot riveted. The floor, being also of steel, with longitudinal pressed corrugations, is very stiff and will not dent under hard usage.



Express Type Body

An all-steel construction except roof, which is covered with canvas and painted. A very serviceable and practical design as used by express companies or for general deliveries. This body is said to be much lighter and stronger than a wood body.

Only the highest grade of patent leveled steel is used, which is said to withstand severe blows without denting. All sharp corners are omitted inside and outside, which is especially advantageous inside, as no dirt can accumulate and it can be cleaned easily.

The priming coat of paint is a special mixture, thoroughly baked in ovens, so as to cling to the surface and prevent possibility of rust. The finish coats are also baked enamels, and not only give a very handsome appearance at first, but retain the finish longer than on wood bodies.

Light weight is another feature due to the proper placing of steel at parts where the greatest stresses occur. Each pound of material has to perform its duty sufficiently and properly; no idle weight is carried, but still the whole structure will carry its intended load.

The bodies are furnished either primed only, or enameled, lettered, upholstered, and with curtains. The chassis, if sent to the factory, will be painted and the body mounted if so desired.

COMMERCIAL SPEDINDICATOR

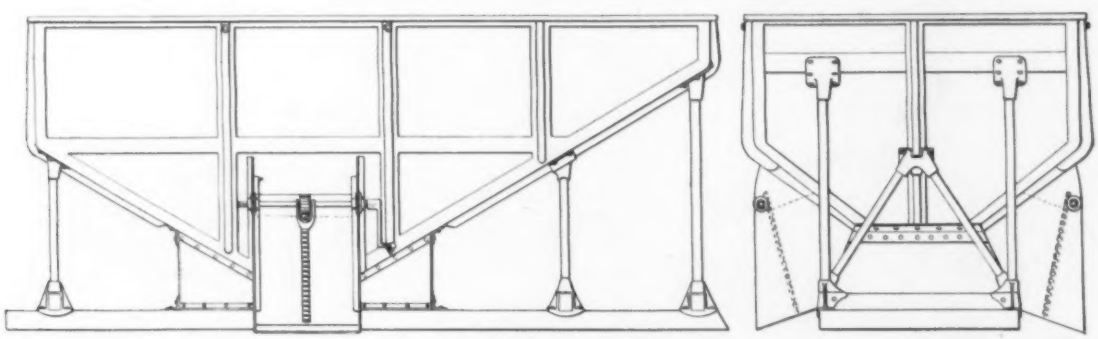
The Sears-Cross Commercial Spedindicator is manufactured by the Sears-Cross Manufacturing Company, 685-89 Eleventh Avenue, New York City, to meet the demands for heavy service It is claimed to be purely mechanical in action, non-magnetic and not to be affected by any change in temperature. Registers both trip and total mileage. Indicates from one to thirty-five miles and enables the operator of the truck to gauge the proper speed at which to drive.

Sears-Cross Model C Spedindicator

This instrument is not intended for pleasure car use. It is of heavier construction throughout, both as to the indicating mechanism and wheel attachment. The dial is full 4 in. in diameter and the figures are large and easily read. This instrument is for use on gasoline, electric, heavy trucks and delivery wagons and sells, Model C complete, for $35.

Truck Shows Four to One Efficiency

The Menominee River Brewing Company, Menominee, Mich., is using a Menominee truck, which is doing very good service, and according to the president of the company, is showing efficiency of four to one as compared with horses. It was installed a year ago this July, and costs about $3.50 a day to operate. The owners lay especial emphasis on the capability of the vehicle in summer. Long trips are made to suburban points and the beer on arrival is cold. If delivered with horses it would take much longer and the beer would be flat and unfit for immediate use. The truck does work that would cost $8 a day with horses.



All-Steel, Coal Dump Body

This body is especially adaptable for delivery of coal, gravel, stone, etc. The design is such that the contents will pour from the chutes by gravity. The body is built on a channel frame, which is fastened to the chassis with a few bolts. All corners are round, giving a beautiful and compact appearance.

Don't Go Mileage Mad!

If Mileage Were the Only Thing—All Truck Tires Should be Made of Steel

DON'T buy Firestone Truck Tires just because they offer you "Most Miles per Dollar of Cost." It is true they *do* this—true that in test after test—in the actual experience of truck owners everywhere—Firestone Tires have demonstrated their extra mileage.

But that is only *one* feature. It should not be your only consideration.

Buy Firestone Truck Tires because their durability is not at the cost of truck.

Buy them because of their wonderful resiliency—because of their absorption of all vibration, whether it be lateral, vertical or forward and backward vibration. Buy them because they protect the costly mechanism of your truck, minimize adjustments and repairs. Buy them because this resiliency lasts till the tire wears down practically to the rim.

Firestone
Truck Tires

A Type for Every Car, Load and Condition of Service

Resilience—this yield and spring—give and take—which protects the truck means quality of rubber—quality of compound—quality of design—quality of workmanship—all in unstinted measure. Since the Firestone Famous Side-Wire Tires were first put out, years ago, Firestone Tires have held an unchallenged leadership for all kinds of service on every kind of road. under all weather conditions.

This leadership has been now added to by the Firestone Notched Tread Tire, preventing creeping at the base—giving greater resiliency—radiating the heat—increasing traction—giving most miles per gallon of gasoline.

Whatever your load, whatever your service requirements, there's tire and car economy in Firestone Tires for you. Get the book.

Regarding Removable Rims Firestone Rims have passed the experimental stage. Their quick removable feature, enables sure, quick tire changes. When tire trouble does occur, the tire alone is laid up for repairs—the truck goes ahead with its profit-making work. Don't experiment—demand these rims which alone are acknowledged correct in principle, dependable in service.

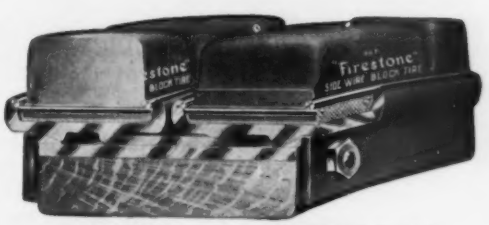
The Firestone Tire & Rubber Company

"America's Largest Exclusive Tire and Rim Makers"

Service Stations Everywhere

Akron, Ohio

One of the Firestone Line



The Roll-Preventing Notched Tread For Mileage and Economy

CHASE MOTOR TRUCK COMPANY, Syracuse, N. Y., has opened an agency in San Francisco.

MERCURY MOTOR TRUCK COMPANY has opened new salesroom at 2009 Michigan Avenue, Chicago, Ill.

A. J. JACKSON, formerly with J. H. Lewis, jobber in Syracuse, N. Y., has agency for Federal truck.

LOCOMOBILE COMPANY, formerly Twelfth & Locust Streets, St. Louis, Mo., has moved to 3033 Locust Street.

COMMERCIAL AUTO COMPANY has been formed at Lexington, Ky., with $1500 capital, for the sale of commercial motor cars.

J. L. DE NEALE COMPANY, Washington, D. C., has secured representation in Washington for the Federal line of motor trucks.

FORAKER-DAYTON MOTOR TRUCK COMPANY, Dayton, O., has established an agency in St. Louis, Mo., with Allen Baker at the head.

AMERICAN LOCOMOTIVE COMPANY, New York, N. Y., has opened wholesale and service station at 435 Turk Street, San Francisco, Cal.

INDUSTRIAL MOTOR CAR COMPANY, with a capital of $35,000, has been organized at Middletown, N. Y., to deal in commercial cars.

MISS L. R. HAWKES is building reinforced concrete commercial garage on Flower Street, near Pico, Los Angeles, Cal. Cost, $60,000.

KISSEL MOTOR CAR COMPANY has established a new service garage at 237 W. 9th Street, St. Paul, Minn., with 30,000 sq. ft. of floor space.

LOCOMOBILE COMPANY OF AMERICA has leased building on West End Ave., near Sixty-fourth St., New York City, for a truck service station.

WESTFIELD MOTOR TRUCK COMPANY, Westfield, Mass., has opened factory branch at 287-93 Northampton Street, Boston, Mass. George L. Cooke, manager.

J. E. GRANGER has taken the agency for the Koehler truck. He also has the agency for the Brush. He is located at Pacific Garage No. 2, Long Beach, Cal.

GRAND RAPIDS MOTOR TRUCK COMPANY, Grand Rapids, Mich., has established a branch in the Parker Garage, Minneapolis, Minn., with C. E. Haldeman as manager.

POWER TRUCK SALES COMPANY, with main offices at Worcester, Mass., has contracted for the sale of Adams trucks in the states of Maine, Vermont and New Hampshire.

SHERIFF-LAWRENCE COMPANY, 410 West North Avenue, Pittsburgh, Pa., has been appointed distributor in Western Pennsylvania for W. H. McIntyre Company, of Auburn, Ind.

BUICK MOTOR COMPANY, whose retail salesrooms were located at 1452 Michigan Avenue, Chicago, Ill., has removed them to main building at Twenty-first Street and Calumet Ave.

DRAGE-HARRIS MOTOR TRUCK SALES COMPANY, Fort Wayne, Ind., has been chartered with $10,000 capital. Directors: Frank H. Drage, Donald H. Harris and Herbert L. Somers.

JOSEPH SCHWARTZ COMPANY, LTD., of 544 Baronne Street, New Orleans, La., has taken on the agency for Adams trucks in the states of Louisiana, Mississippi and southern Alabama.

PITTSBURGH AUTOMOBILE COMPANY, Pittsburgh, Pa., has been bought out by the Oakland Motor Car Company, Pontiac, Mich., who has opened a branch at 5913 Baum Street. Frank S. Odell, manager.

SERVICE MOTOR TRUCK COMPANY, Wabash, Ind., has established an eastern agency at 1435 Vine Street, Philadelphia, Pa., and a branch of the latter has been opened at 16 Market Street, Camden, N. J.

UNIVERSAL MOTOR TRUCK COMPANY has moved its New England branch, 883 Boylston Street, Boston, Mass., to 193 Pleasant Street, where its business and service departments will be under one roof.

THE STERNBERG MANUFACTURING COMPANY has opened a direct factory service branch and maintenance bureau in New York City, this being operated by the Sternberg Motor Truck Company, 285 East 137th Street.

THE WHITE COMPANY has established a direct branch in Baltimore, Md. This is the outcome of the White Automobile Company, Mount Royal and Guilford Avenues, formerly agent for the White Company, being merged into the White Motor Car Company.

MISSOURI TAXICAB COMPANY, Channing Avenue and Locust Street, St. Louis, Mo., is building a garage 50 x 160 ft. on Euclid Avenue, near Washington Boulevard. The building will be completed about January 1st; total investment is $25,000. Walter Isaacs and Herman Rindskopf, proprietors.

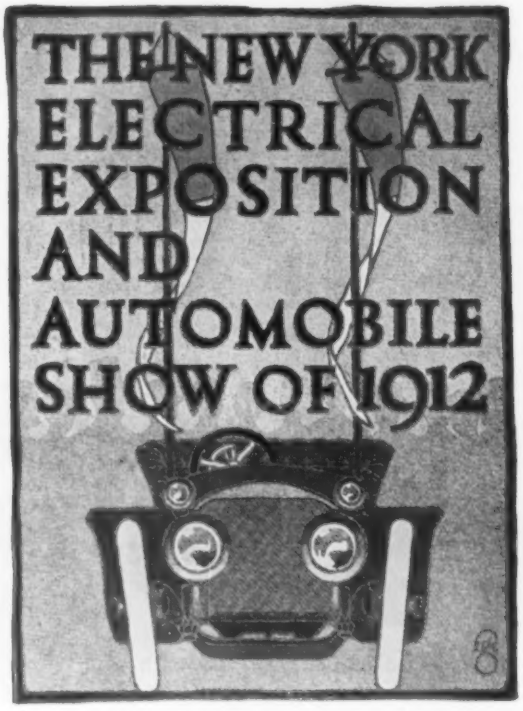
GENERAL MOTORS TRUCK COMPANY, Detroit, Mich., has opened new service station and garage. The new building, which has just been completed at the cost of $150,000, has a storage capacity of 200 cars. It is located at Fort & Twelfth Sts. and Lafayette Blvd.

A. O. SMITH COMPANY, of Milwaukee, Wis., have appointed the following agents for the Smith worm drive truck: St. Louis, Geo. C. Brinkman Company, 2818-20 Locust St.; Cincinnati, Commercial Motor Sales Company, 937-43 West 8th Ave.; St. Paul, The Motor Truck Company, 407 Rosabel St.

KELLY MOTOR TRUCK COMPANY, Springfield, O., will maintain service station at Fountain Street Garage, 357 Fountain St., Providence, R. I., to care for all Kelly trucks in the state, and where a complete stock of repair parts will be available, together with competent mechanics from the Kelly factory.

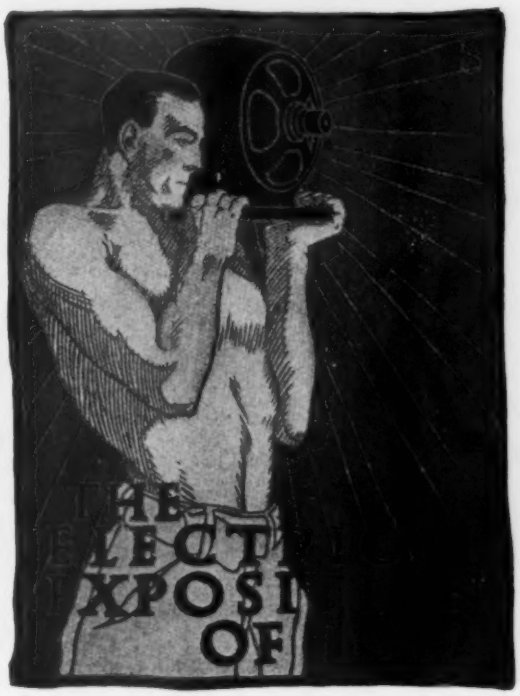
The New York Electrical Exposition and Automobile Show of 1912 In the New Grand Central Palace October 9th to 19th

Celebrating Thirty Years of Edison Service in New York



At this exposition will be shown in practical operation various machines and appliances for use in the home, office and factory—all working toward greater comfort, convenience and economy.

The New York Edison Company is and will be always at your service.



This great show is made possible only through the efforts of The New York Edison Company to keep ahead, at all times, in every phase of electrical energy, for light, heat and power.

Today—after thirty years of service.

The New York Edison Company
Always at your service

Come see
the many practical
uses of Edison Service
for home and business at
The New York Electrical
Exposition and Automobile
Show of 1912 - in the New
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ington Ave. and 46th St.,
October ninth to nineteenth

The New York
Edison Company

The Selection of and Instructions to Salesmen

BY E. S. FOLJAMBE

This is the third of a series of eight articles by Mr. E. S. Foljambe, dealing with subjects of interest to agents, dealers and manufacturers. Briefly, the subjects taken up are: Taking On a Commercial Car Agency; The Kind and Location of Salesroom; The Selection of and Instructions to Salesmen; Obtaining Prospects; Carrying the Campaign Into the Prospect's Territory; How the Engineering Force Can Assist the Retail Sales Department; The Agent's Responsibility After the Sale, and Relations Between the Agent and the Manufacturer. We are sure these will prove instructive and interesting reading.—EDITOR.

PART III

Commercial Car Selling Different From Pleasure Car

N selecting an individual or a corps of salesmen to handle commercial cars, it must be remembered that an entirely different type of man is required from that most successful in selling pleasure cars. The sale of commercial cars is so distinctly different from that of pleasure cars that it might just as well be considered an entirely different line. Practically all the methods of advertising, obtaining prospects, demonstrating and closing the sale are as far removed from pleasure car practice as selling brooms is from selling vacuum cleaners. In commercial car selling, repeat orders ever stand out in bold relief before the mind's eye of the salesmen. This is his ultimate aim, the goal which he is endeavoring to reach. Too frequently it is a god worshipped so fervently that he sacrifices to it to his own destruction. In pleasure car selling this does not enter, except in the few isolated cases of very wealthy families, who might purchase several cars of one make.

Another feature which at once differentiates selling a truck from selling a pleasure car is the necessity with trucks of deep study and analysis of the prospect's business conditions and requirements; this never enters into the sale of a pleasure car. The effect of this alone on the type of salesmen is very marked and puts him into an entirely different class from the salesmen of pleasure cars. With trucks the element of femininity does not enter. Catering to the artistic and luxurious tastes of the fairer sex, which plays so important a part in pleasure car sales, is entirely absent. With trucks the color of the paint carries slight weight as compared with performance, and unfortunately for the driver, the comfort of the man who operates the truck is usually a minor consideration and one of the last details to be given consideration. This, if I may be allowed to digress, is a mistake and should be remedied. The work that a driver gets out of a machine during inclement weather is very likely to be directly proportional to his physical condition.

If he is entirely exposed, numbed with the cold, blinded by the sleet and so stiff that he cannot well control the machine, he will stop more frequently and tarry longer at the corner saloon.

Separate Pleasure Car and Truck Salesmen

The difference between selling trucks and pleasure cars as discussed in the foregoing paragraph, is so great that two entirely distinct and different types of salesmen are necessary. In establishments where both pleasure and commercial cars are sold, it is usually advantageous and often necessary to have an entirely separate group of salesmen for each type of vehicle. There are a few companies whose salesmen handle both. A recent canvass of many of the well known agencies showed only 9 per cent. in which the same salesmen handled both trucks and pleasure cars and 91 per cent. where entirely separate sales forces were maintained for each.

The difference in the requirements of the truck salesmen and pleasure car salesmen is so great that some companies go to the extreme of never hiring a salesman who has formerly been employed in selling pleasure cars, claiming that it is so difficult for them to unlearn all that they have previously learned. It is easier to take an entirely green man and train him in the art of truck salesmanship. Most of these companies express the opinion, however, that salesmen from other lines, such as men who have sold machinery, make very good truck salesmen. The very evident superior requirements of the truck salesman is evinced by the salaries paid, the minimum salary paid to the truck salesman being approximately the maximum paid to the pleasure car salesmen.

Qualifications of the Truck Salesmen

It has been said "Salesmanship may be interpreted as ability to read human nature," and in general this is very largely true; it is very much more true in pleasure car selling, however, than it is in disposing of trucks. Truck salesmanship depends largely upon the analytical ability of the salesman. He must be an analyzer, a production and efficiency doctor; in other words, must be able to apply to a limited degree the principles of scientific management. Many a salesman depends upon his ability to analyze prospect's business, plan and reorganize not only his delivery system, but occasionally even the interior arrangements of the store, before a sale can be made. He must be a gentleman, loyal, truthful, and possess those human, brotherly, man to man qualities which beget lasting friends. He must have the same energy, "gift of gab," pleasing personality and enthusiasm necessary to all salesmen, but must not allow himself to talk over much. "A real salesman is one part talk and nine parts judgment," and uses the nine parts of judgment to tell when to use the one part of talk. He must have that enthusiasm which begets belief, for "enthusiasm is a proof that the man believes in himself, and the man who believes in himself is the man who makes others believe in him."

There is no one thing more valuable to the salesman than enthusiasm. If he does not possess this he will never make an exceptionally good salesman. It is true that the business man requires logical deductions and proof by figures that it is best for him to take on commercial cars, and occasionally sales can be made on this basis alone, by a salesman who has no enthusiasm in his work, but where there is one such instance there are hundreds of sales made where the same logic and figures are accompanied by that contagion which is always present with enthusiasm. A salesman's words to be effective must carry conviction to the mind of the prospect. There is nothing like enthusiasm to carry this conviction. Real enthusiasm is usually born of an interest in and knowledge of the subject.

Should the Salesman be Thoroughly Familiar With Mechanical Details?

Knowledge of the truck is a subject which has led to considerable discussion as to whether the truck salesman should be thoroughly familiar with the mechanism, whether he should be almost an engineer or a "near-engineer," whether he should be a college graduate, etc. Answering the last question first, it may be said at once and emphatically, that it is not necessary for a salesman to be a college graduate, but with the same natural ability the one who is a college graduate undoubtedly has the advantage of the other man.

It is occasionally argued that it is not necessary for the commercial car salesman to know the construction and material, and in general the mechanical details of the truck he is selling; that a man with good presence, easy flow of langauge, a convincing manner and some superficial knowledge, occasionally backed up and augmented by a consultation with some one who does know the details, is just as good a salesman, and further knowledge is unnecessary. The writer cannot agree in any particular with this point of view and believes implicitly in a thorough knowledge of mechanical details on the part of the salesman.

Nothing so quickly puts in doubt in the mind of the purchaser, statements previously made by a salesman, as inability to answer some simple question on mechanical details. The salesman may affirm and assert with much ardor that the truck is better than any other, that its construction is the best known, the material and workmanship the finest that can be had, but when he shows that he does not know what he is talking about, when cornered on the details of construction, the purchaser immediately questions all of his previous assertions. Many a sale has been lost through lack of definite knowledge of materials and construction. The high-class salesman should have sufficient knowledge of manufacturing methods to know the difference between a forging and a casting, and between a driving and a running fit. He should know which parts are cast steel and which cast iron, and why these parts are made of those materials. He should be familiar with the various types of bearings, their adjustment and the nature of the material entering into their makeup; he should be familiar with the wearing qualities and advantages of cast iron in frictional engagement, and its ability to withstand high temperature without excessive warping. Truck purchasers or their representatives, are usually men familiar with machinery, and the salesman who does not know his machine thoroughly, although he may be capable in other respects, is very apt to get beyond his depth and create a bad impression, resulting in the loss of a sale.

Should the Salesman be an Engineer?

The foregoing discussion leads to the question, should the salesman be an engineer. Again we may say emphatically, this is not necessary but is a decided advantage. Of two men gifted with equal ability as salesmen, the one who has had an engineering training will invariably prove the more valuable. Although engineering training is not necessary, the salesman must be endowed with the engineering instinct. Much of his work consists of analyzing, tabulating figures, and by logical deduction arriving at a satisfactory solution of difficult conditions pertaining to the installation of motor delivery.

Occasionally establishments employ one man with this ability while the salesman himself is not capable of doing this work. In such a case the salesman is more or less a figure head and is used more as a locator of prospects, a clerk and a man to talk pleasing generalities with the customer, than in any other capacity, and the real salesman who has analyzed the case does the business. It sometimes happens that the man with the engineering ability is entirely lacking in the qualities necessary to the salesman; under these circumstances he had better not be considered and a true salesman with the engineering instincts employed.

Instructions to Salesmen

Of prime importance in any business is co-operation and unity of effort on the part of the selling force. In other words, team work is as necessary to successful business victory as it is on the foot ball field or with the rowing crew. Where one member of the organization is pulling out of time with the others results are hampered and the full measure of sales cannot be realized. There is but one way to obtain this unity,—give each man a share in the profits and hold frequent meetings of the salesmen where instructions can be given them by the head. These meetings should be frequent, in some companies taking place every morning for three-quarters of an hour. It will be found that the information given by one salesman will often prove extremely valuable to another. Trips to distant parts may often be saved one man by another who is going very nearly to the same location. Co-operation of the salesmen eliminates a prevalent source of trouble, namely, dissatisfaction among prospects due to different treatment by different salesmen.

There are several points which should be clearly instilled in the mind of the salesman, among which may be mentioned: A thorough knowledge of the business conditions of the prospect before it is attempted to bring the sale to a head. That prospects must always be treated with the greatest courtesy regardless of their attitude to the salesman; angry words are not conducive of truck sales. Salesmen should confine their conversation to their own truck as far as possible and should not run down the products of their competitors; the knocking salesman always loses in the end, to say nothing of the damage he does to the industry in general. This does not mean, however, that he is to be ignorant of the construction of his competitor's truck; such a knowledge is absolutely essential because this or that feature is very apt to be mentioned by the purchaser and unless the salesman is familiar with the construction in question he will be unable to show wherein his own truck is superior.

It is important that a truck should never be sold where it will not prove an advantage to the purchaser. No salesman should be allowed for the sake of a sale to place a truck in such service. A special study of the needs of the user will often bring to light a method by which apparently insurmounted difficulties can be overcome. A three-ton truck should never be sold where a two-ton machine will do the work, and it is just as bad to sell a two-ton when a three-ton truck is needed. The experienced salesman never forgets that he is selling, "not trucks, but economical service." Do not talk technical details unless forced to, talk service.

(To be continued.)

One of the Squadron of Twenty-Four White Motor Trucks Owned by Armour and Company, Chicago, and Operated by them in the Principal Cities of the United States

WHITE MOTOR TRUCKS

The predominant use of White Motor Trucks by the foremost mercantile and manufacturing firms, not only in the United States, but throughout the world, is the most convincing proof of their superior merit in practically every line of service.

A Few Well-Known Owners of White Squadrons

American Can Company
American Chicle Company
American Steel and Wire Company
Armour and Company
Berghoff Brewing Association
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Brazilian Government
Coca-Cola Company
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Joseph Horne Company
Hudson's Bay Company
Illinois Steel Company
McCreery and Company
National Cash Register Company
Pabst Brewing Company
Philippine Islands Government
Postum Cereal Company, Ltd.
Remington Typewriter Company
Russian Government
W. and J. Sloane
Standard Oil Company
United Cigar Stores Company
United States Government
Winchester Repeating Arms Company

White Motor Trucks are built in capacities of 3-4, 1 1-2, 3 and 5 tons, and all models are uniform throughout in parts and design, thus making them the most practical for the standardization of delivery or transportation service. Literature and detailed information furnished on request.

Gasoline Motor Cars, Trucks and Taxicabs

The White Company
Cleveland

Standard Highland Bodies

The flare board bodies are carried in 38 different sizes, the bodies themselves being carried in stock complete, excepting sub-sills. This covers the range from one-half ton to ten ton capacity of trucks. This meets all the possible requirements as to sizes that can be asked for. The flare board type can be equipped with canopy top and curtains, or canopy top, screens and curtains, making available three distinctive types of bodies and each type in 38 different sizes, which in itself covers a wide range of usefulness.

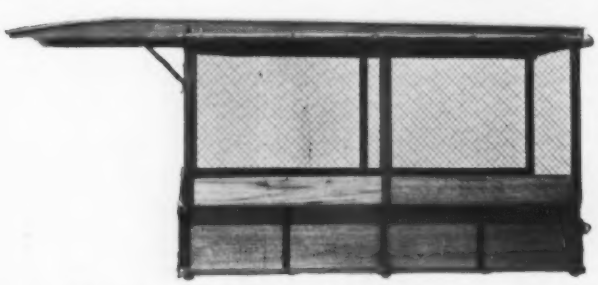
The stake bodies are carried in 27 different sizes, and four different types of stake arrangements for each size of body. This makes in reality four different types of bodies, any one of which can be equipped with canopy top and curtains.

Furniture bodies are carried in 19 different sizes, and like the flare board bodies can be equipped with canopy top and curtains, or canopy top, screens and curtains, making three more different types each in 19 sizes. The panel bodies are carried in 8 different sizes at present.

Practically all of the irons are forgings and are made from dies of the company's own design to meet the exact requirements of the body. Sub-sills for attaching bodies to chassis are furnished with all bodies and are shipped attached to the body.

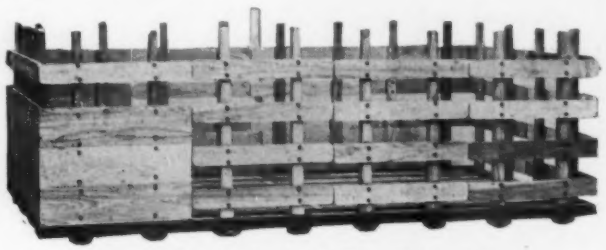
The Standard Highland Flare-Board Body

On the flare board body the irons are forgings, no malleables being used. The stake bodies are so designed that the platform is standard, admitting of a variety of stake arrangements. The stakes are held firmly in iron pockets of special design, 4 in. deep, insuring stability of even the highest stakes. The pockets are inserted in the sill, which is then bound with iron, exposing only the flush edge of the platform.



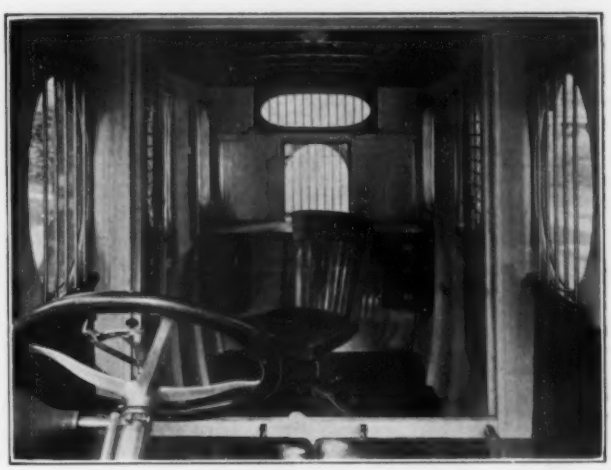
The Highland Flare-Board Body With Canopy Top and Screens

Standard Highland furniture bodies are designed with deep panels, these being 18 in. up to and including 54 in. width of body and 22 in. on the 60 in. and wider bodies. On these bodies as on all other Highland bodies all irons are forgings. The inside irons are of the half oval shape with the heads of bolts countersunk, so that there are no sharp edges or projections to scratch the articles handled. All frame work is ash or oak, and floor-boards and other surfaces subjected to the same severe wear are hard wood. The panels are not merely screwed to sills, but are set in a groove with white lead the entire length, thus insuring a lasting joint.



The Highland New York Type Stake Body

Standard Highland bodies are made for motor trucks of any type and can be had in all capacities adaptable for any purpose whatsoever. They are manufactured by the Highland Body Company, Cincinnati, O.



Cartercar Pay Car

What might well be called a "Bank on Wheels" has just been made up by the Cartercar Company, of Pontiac, Michigan, for the use of the paymaster of Detroit. This is a most unique car, fitted up inside as a regular office for the paymaster, and he is almost as secure inside with the funds as in a bank. This little office is locked so securely, that should the driver be overpowered, there would be little possibility of the culprits reaching the cash. Formerly the Detroit city pay rolls had been distributed by policeman on foot, but several hold-ups convinced the city treasurer of the necessity of some means whereby this danger could be avoided.

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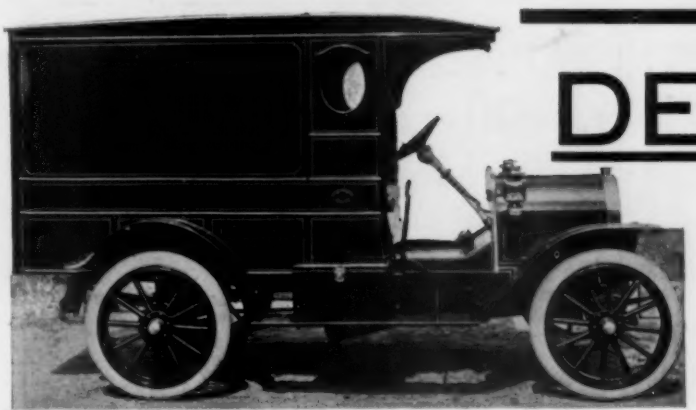


OUR NEW MODEL "C"
Panel Body, Four Cylinder, 20 H. P., Bosch Magneto, Pneumatic Tires—32x3½—Complete, $875.00. Motz Solid Tires—34x2½—Complete, $825.00

DEALERS—

We invite immediate correspondence concerning territorial selling arrangements for 1913. We want to hear from that type of dealer who recognizes the exceptional money-making opportunity in selling

The Commerce Car

Three models—one chassis. At a price—$850—that makes the **Commerce** a **self-seller.** If you want the big profits to be had in truck selling, **here is your opportunity.**

The Commerce is a **specially built** commercial motor car—not a "converted" pleasure car. Load capacity—1000 pounds. **Built for work.**

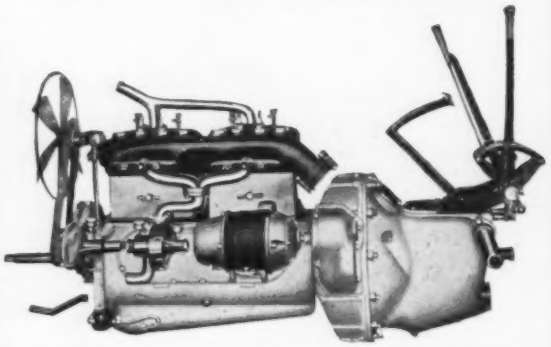
Investigate the financial stability of our Company—we give references and require them. Ask any of our dealers for their opinion of **The Commerce** and the rapid sales possibilities.

The winter season is approaching—the best time for motor truck selling. Get in line now and secure **your** share of the business.

THE COMMERCE MOTOR CAR COMPANY

General Offices: 633-639 Penobscot Building ∴ **DETROIT, MICHIGAN**

HAZARD
UNIT POWER PLANT



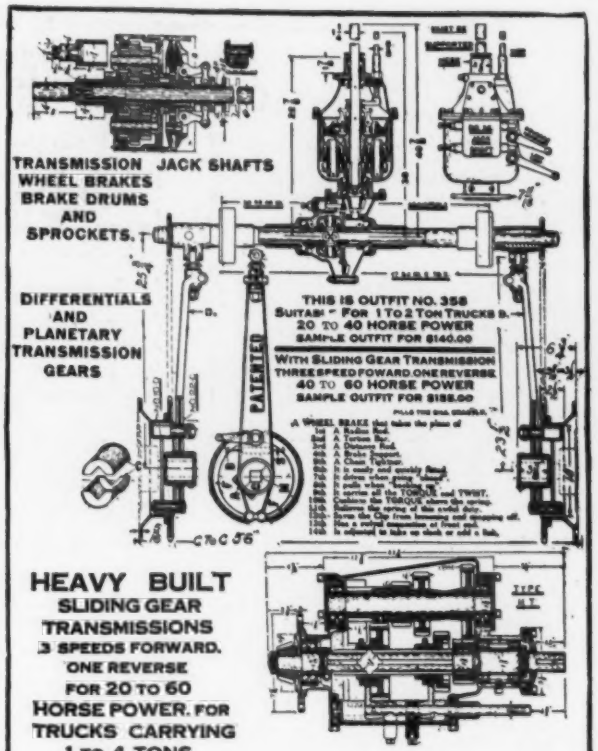
Motor, Clutch, Transmission and Gear Shift Control all in One Compact Outfit.

Center Control, Three Point Suspension, Oil Tight, Dirt Proof.

Gear Reduction Integral with Unit Power Plant permits straight line shaft drive to live rear axle. Automatic inclosed Governor.

No Time Limit to Our Guarantee.
Full Descriptive Catalog on Request.

HAZARD MOTOR MFG. CO.
840 Coates Street, ROCHESTER, N. Y.



HEAVY BUILT
SLIDING GEAR
TRANSMISSIONS
3 SPEEDS FORWARD.
ONE REVERSE
FOR 20 TO 60
HORSE POWER. FOR
TRUCKS CARRYING
1 TO 4 TONS

MUNCIE GEAR WORKS. MUNCIE. IND.

Motz Cushion Tires

You know Motz Cushion Tires are **trouble-proof** and **easy riding.**

But do you realize that any car, on a given charge of fuel, will travel farther and faster when equipped with Motz Cushion tires? It's a fact.

You'll get more miles of tire service, too!

You get a **guarantee** of 10,000 miles—two years.

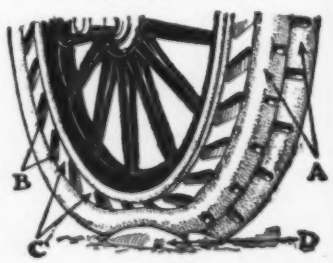
And the mechanical parts of your car will get the same protection from bumps and jolts as pneumatic tires give.

For Motz Cushion Tires have double treads, which prevent skidding and distribute weight to the sides. The undercut sides allow free action of bridges. The slantwise elastic bridges yield like air in pneumatic tires.

These tires fit any standard clincher, universal quick-detachable or demountable rim.

You have asked for an economical tire. Here it is. Economical in every sense. Gives utmost service with no repair expense—easy-riding and protects your car—gives low cost of hauling—easy to apply.

Write for our Booklet 85.



(A) shows double notched treads.
(B) shows undercut sides.
(C) shows slantwise bridges.
D) shows absorbing means when passing over an obstruction.

THE MOTZ TIRE & RUBBER CO.
Factories and Executive Offices, AKRON, OHIO

BRANCHES:
Pittsburgh, New York, Detroit, Kansas City, Chicago, Cleveland, Philadelphia

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The White Auto Co. - - Baltimore
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Two publications, ordered together - - - - - - - - $3.00
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Subscriptions for more than one year at special prices.

NOTE—To energetic subscription solicitors we will make a most attractive proposition.

Write for particulars and sample copies. State experience, how much time will be devoted to this work and furnish names of 3 business references.

TELL YOUR FRIENDS OF THIS OPPORTUNITY

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Panel Body, $1800
Capacity, 1500 Pounds

Lippard-Stewart

The Delivery Car

Panel Body, $1800
Express Body with top, $1775
Open Box Body, $1775
Stake Body, $1775
Police Patrol, $2325
Ambulance, $2325
Hotel 'Bus, $2325

¶ Many Light Delivery Cars RESEMBLE The Lippard-Stewart, But Not One POSSESSES ALL THE FEATURES That Have Made It The Ideal Light Delivery Car.

Lippard-Stewart cars made good right from the start. Wherever merchants substituted them for a horse-drawn delivery service, they proved their efficiency and their reliability. In appearance they are trim and attractive, and in performance, dependable and economical.

As pioneers in the building of a really high-class 1500-pound delivery car selling at a moderate price, we naturally looked for imitators, and these have not been slow in forthcoming. A particular case in point is the adoption by several makes of cars of the French type of hood, the graceful body lines, and specifications SOMEWHAT SIMILAR to those of the Lippard-Stewart. However,

The Resemblance Lies in the Price and Appearance ONLY

The frame of the Lippard-Stewart is 5½ inches deep at the point of maximum stress; cars that "resemble" it are 4½ inches deep. Lippard-Stewart front springs are 40 inches long; "similar" cars are equipped with springs 38 inches long. Rear springs in Lippard-Stewart cars and those that "resemble" it are 51 inches and 50 inches respectively. Our tire specifications are 35 x 4½ all around; others are 35 x 4½ rear and 34 x 4 front.

The rugged cone clutch in Lippard-Stewart cars is designed for a 50 H. P. car and requires only casual attention. It is a vast improvement over the multiple disc clutch. Moreover, our cars are equipped with brake equalizer, and the steering gear is designed for a ***one-ton commercial*** car—not for a pleasure vehicle.

Special Features of Lippard-Stewart Construction

1. Continental 30 H. P. Motor
2. Eisemann Magneto
3. Brown-Lipe Selective Transmission
4. Cone Clutch
5. Full Floating Timken Rear Axle
6. Timken Roller Bearings Throughout
7. Special Spring Suspension
8. Left-hand Drive
9. Every Part Easy of Access
10. Tires—35x4½ Front and Rear

Lippard-Stewart Efficiency, Mr. Dealer, has not yet been successfully imitated by any car selling at the same price

If we are not yet represented in your territory, we will make you a proposition that will insure you real profits right from the start. We will require you to produce proof of your business integrity and business ability, and to invest only enough money to guarantee your interest and good faith. Read the Lippard-Stewart specifications carefully.

Lippard-Stewart Motor Car Co.

Buffalo, New York

AUGUST BECKER, President. E. J. BARCALO, Treasurer.
J. C. MILLAR, Secretary. C. S. DAHLQUIST, Chief Engineer.
W. F. REYNOLDS, Sales Manager.

LIPPARD-STEWART MOTOR CAR CO. (CCJ)
Buffalo, N. Y.
Please send catalogue and dealer's proposition.

Name .....
Street .....
City ..... State .....

DEALERS—Your Truck Opportunity!

Many Styles of Body
but
ONLY ONE CHASSIS
2000 lbs. Capacity

LITTLE GIANT Commercial Cars

The brains of the engineering departments of six Modern Manufacturing Plants Have Made it Possible for the Little Giant to Live and Thrive Without Brains! Four Plants Shown Below.

Model D. Open Body with Flare Boards. Load Space, 44 x 90 inches. Height, 13 inches.

Model D. Platform and Stake Body. Load Space, 44 x 90 inches. Stakes, 30 inches high.

Model D. Full Panel Top. Load Space, 78 x 40 inches, widening to 44 inches. Also made with tail gate and side screens, and tail gate and side and rear screens.

Model D. Open Flare Board with Canvas Top. Load Space, 44 x 90 inches. Height, 57 inches.

IN building your local business to a standpoint of stability and recognized merit, YOU MUST OF NECESSITY offer your customer a product of KNOWN REPUTATION! You cannot afford to conclude selling arrangements with other than a reputable truck concern.

The Builders of "Little Giant" Commercial Cars

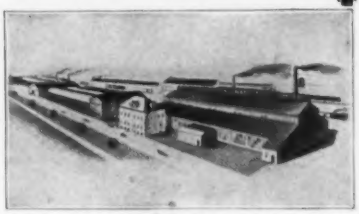
have 20 years in business to their credit,—a capitalization of $6,000,000.00,—a world-wide business reputation,—and a

COMMERCIAL MOTOR CAR OF UNQUESTIONED MERIT!

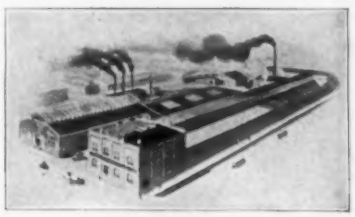
We Want Responsible Dealers

If you want to make big money,—if you want a dependable truck to sell,—if you want the backing of this vast organization,—we want to hear from you now! Write today for complete information, terms, catalog, etc. Act now,—be prepared to secure your big share of the truck business for 1912-1913.

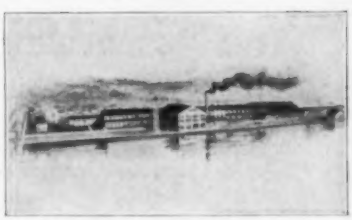
ADDRESS DEPARTMENT M.



Franklin Plant No. 2



Cleveland Plant



Franklin Plant No. 1

Detroit Plant

CHICAGO PNEUMATIC TOOL COMPANY

MANUFACTURERS OF

LITTLE GIANT ONE TON COMMERCIAL CARS

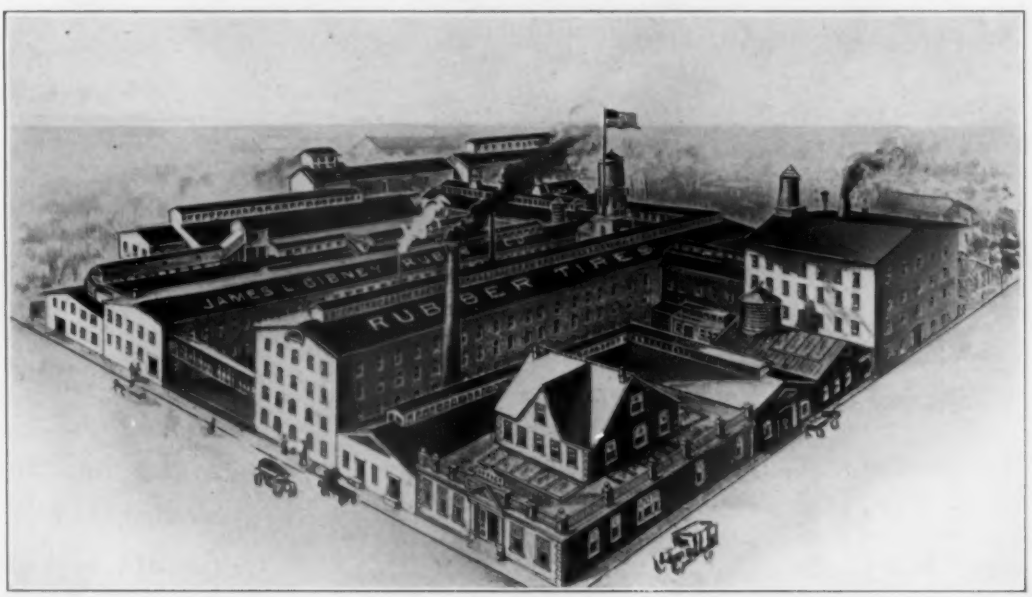
General Offices, Fisher Building, Chicago. **Eastern Offices, 50 Church St., New York**

It's gratifying to be compelled to decline orders because the demand exceeds the supply, but it is more profitable to meet the demand; hence

OUR NEW FACTORY

where are made the THREE-YEARS-AHEAD

GIBNEY WIRELESS TIRES



The trade is cordially invited to visit our new plant. Tire quotations and dates for delivery on request.

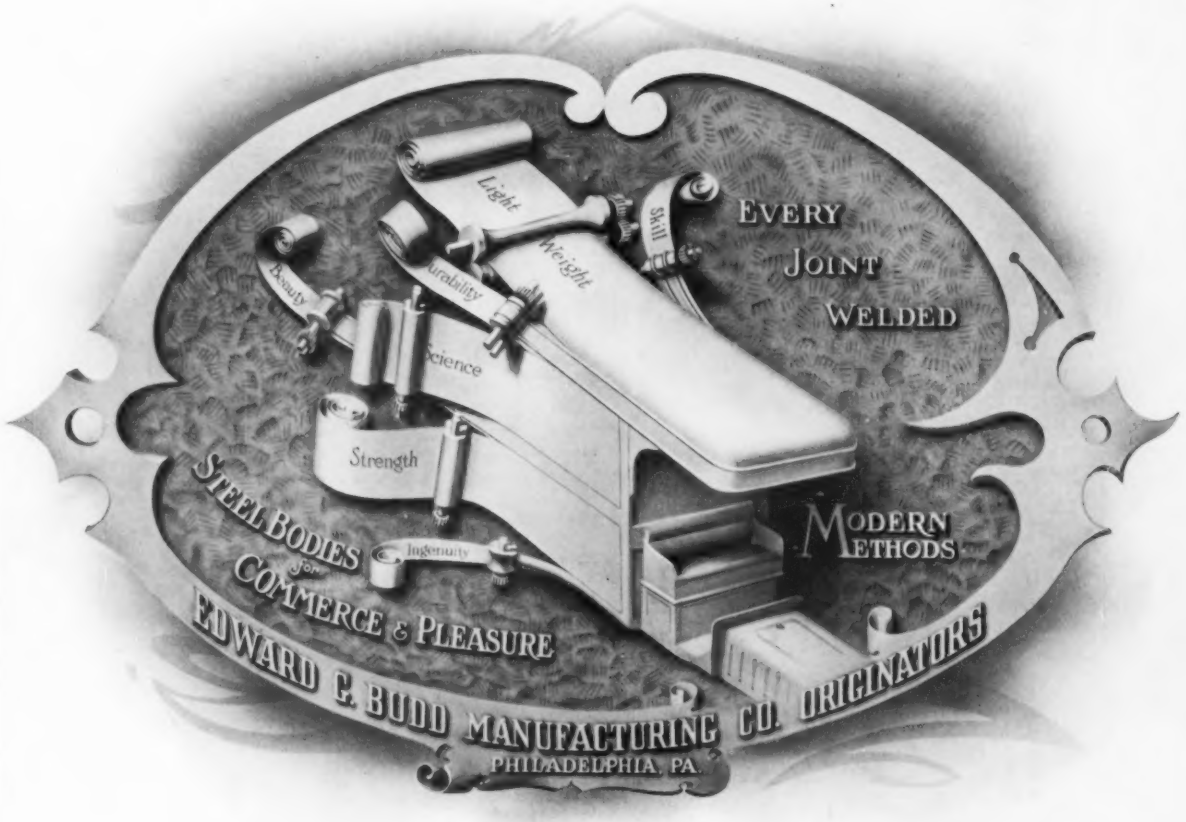
GIBNEY TIRE & RUBBER CO.

Factory, CONSHOHOCKEN, PA. PHILADELPHIA NEW YORK

Pressed Steel Bodies

for

Pleasure and Commercial Cars



All Bodies Built of Special Pressed Shapes, Welded and Riveted; All Joints and Sharp Corners Eliminated.

Workers of Sheet Metal

OUR FACTORY IS EQUIPPED WITH SPECIAL MACHINERY TO SUPPLY BODIES ON SHORT NOTICE.

Designs and Prices Furnished on Application.

Light in Weight
Maximum Strength
Attractive Design
Newest Methods

Makers of Difficult Shapes in Sheet Steel

Edward G. Budd Manufacturing Company

Factory: Aramingo and Tioga Sts. - - Philadelphia, Penna.

Photograph of an Actual Test

An automobile wheel varnished on half the spokes with a well-known gear varnish and on the other spokes with

Valentine's Vanadium Chassis Finishing

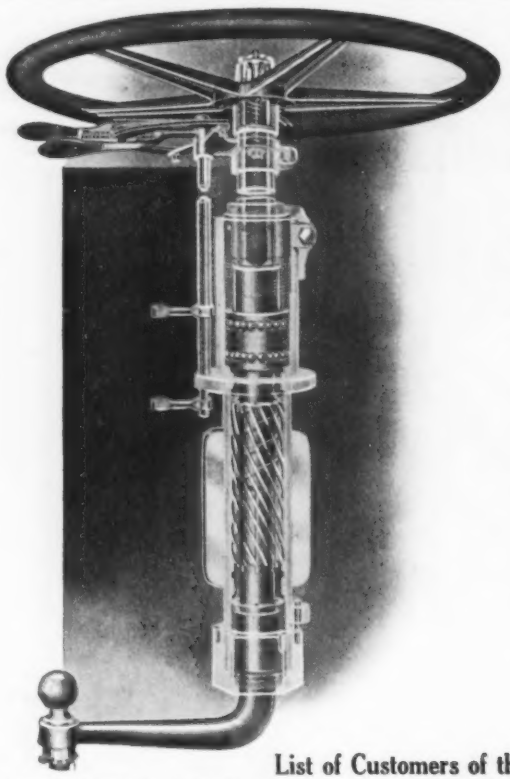
was revolved for several hours in soapy water. The result of the test was that the ordinary gear varnish turned grayish and was destroyed while Vanadium Chassis Finishing was absolutely unharmed, and retained all its original brilliant lustre.

Send for a free sample of Vanadium Chassis Finishing.

Valentine & Company

456 Fourth Ave. New York — 343 S. Dearborn St. Chicago — 74 Pearl Street Boston

TRADE VALENTINE'S VARNISHES MARK



110 Truck Manufacturers

equip their trucks with Ross Steering Gears. A year ago 60 truck manufacturers used our Steering Gears. This is an increase of 83⅓ per cent in one year.

Below we give a list of the 110 truck manufacturers using the Ross Steering Gears.

List of Customers of the Ross Gear & Tool Co., Lafayette, Ind.

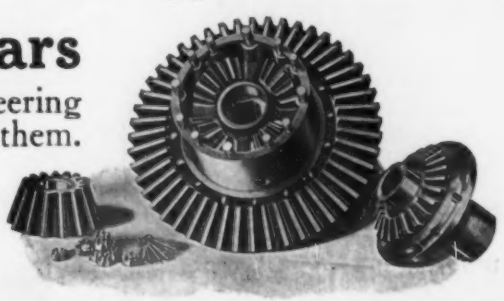
Atlantic Vehicle Co., Newark, N. J.
Alma Mfg. Co., Alma, Mich.
Ahrens-Fox Fire Engine Co., Cincinnati, O.
Argo Electric Vehicle Co., Saginaw, Mich.
Avery Co., Peoria, Ill.
H. W. Bell & Co., New York, N. Y.
Brasie Motor Truck Co., Minneapolis, Minn.
Bowling Green Motor Car Co., Bowling Green, O.
Bronz Electric Vehicle Co., New York, N. Y.
W. H. Budreaus, Indianapolis, Ind.
Buckeye Mfg. Co., Anderson, Ind.
J. A. Burns & Co., Washington, D. C.
Canadian Commercial Motor Car Co., Windsor, Ont.
Cartercar Co., Pontiac, Mich.
Continental Motor Truck Co., Denver, Colo.
Cass Motor Truck Co., Port Huron, Mich.
Champion Wagon Co., Owego, N. Y.
Clark Delivery Car Co., Grand Crossing, Ill.
Commercial Auto Co., Milwaukee, Wis.
C. De L. Engineering Works, West Nutley, N. J.
Edward S. Clark, Boston, Mass.
Dain Mfg. Co., Ottumwa, Ia.
Danielson Engine Works, Chicago, Ill.
Davis Manufacturing Co., Milwaukee, Wis.
Dayton Auto Truck Co., Dayton, O.
Diamond T Motor Car Co., Chicago, Ill.
James C. Doyle, Portland, Ore.
Empire Automobile Co., Glens Falls, N. Y.
Four Wheel Drive Auto Co., Clintonville, Wis.
Franklin Boiler Works Co., Troy, N. Y.
Furnas Office & Bank Funiture Co., Indianapolis, Ind.
Garford Co., Elyria, O.
Gramm Motor Truck Co., Lima, O.
Gramm Motor Truck Co. of Canada, Walkerville, Ont.
Gramm-Bernstein Co., Lima, O.
Grand Rapids Motor Truck Co., Grand Rapids, Mich.
Harder Auto Truck Co., Chicago, Ill.
Harvey Motor Truck Co., Harvey, Ill.
Hoffman Motor Truck Co., Minneapolis, Minn.
Harwood Barley Mfg. Co., Marion, Ind.
Joshua Hendy Iron Works, San Francisco, Cal.
Hercules Motor Truck Co., Chicago, Ill.
Ice Mfg. Co., New York, N. Y.
Juno Motor Truck Co., Juneau, Wis.
Kanawa Mine Car Co., Charleston, W. Va.
Kanawa Motor Truck Co., Charleston, W. Va.
Kelly Motor Truck Co., Springfield, O.
Kentucky Wagon Mfg. Co., Louisville, Ky.
Kinnear Mfg. Co., Columbus, O.
A. R. King Mfg. Co., Kingston, N. Y.
Kissel Motor Car Co., Hartford, Wis.
Knox Automobile Co., Springfield, Mass.
Knickerbocker Ice Co., Chicago, Ill.
Kopp Motor Truck Co., Buffalo, N. Y.
Lauth-Juergens Motor Car Co., Fremont, O.
Lewis Motor Truck Co., San Francisco, Cal.
W. H. McIntyre Co., Auburn, Ind.
McConnay & Torley Co., Pittsburgh, Pa.
Mack Bros. Motor Car Co., Allentown, Pa.
Marquette Motor Vehicle Co., Chicago, Ill.
Martin Carriage Works, York, Pa.
F. L. Moore Motor Truck Co., Los Angeles, Cal.
Geo. Mansur Co., Haverhill, Mass.
A. Meisler & Sons, Sacramento, Cal.
Merchants Automobile Co., Chicago, Ill.
Monitor Automobile Works, Janesville, Wis.
Moreland Motor Truck Co., Los Angeles, Cal.
Morgan Motor Truck Co., Worcester, Mass.
Mogul Motor Truck Co., Chicago, Ill.
Motor Conveyance Co., Milwaukee, Wis.
Nelson & Lee Moon, Chicago, Ill.
New Haven Truck & Automobile Works, New Haven, Conn.
Northern Motor Car Co., Kingston, Canada
Old Reliable Motor Truck Co., Chicago, Ill.
Ohio Electric Car Co., Toledo, O.
Packers Motor Truck Co., Wheeling, W. Va.
Pope Mfg. Co., Hartford, Conn.
Phoenix Iron Works, Winona, Minn.
Randolph Motor Car Co., Flint, Mich.
Rapid Motor Vehicle Co., Pontiac, Mich.
Rector Engineering Co., New York, N. Y.
Reliance Motor Truck Co., Owosso, Mich.
Robinson-Loomis Motor Truck Co., Minneapolis, Minn.
Rowe Motor Co., Coatesville, Pa.
Sandusky Auto Parts & Motor Truck Co., Sandusky, O.
Schmidt Bros. Co., Chicago, Ill.
Seamless Pressed Steel & Mfg. Co., Red Key, Ind.
Service Motor Car Co., Wabash, Ind.
Sheldon Axle Co., Wilkes-Barre, Pa.
Speedwell Motor Car Co., Dayton, O.
Stegeman Motor Car Co., Milwaukee, Wis.
Sternberg Mfg. Co., Milwaukee, Wis.
Teel Mfg. Co., Boston, Mass.
Transit Motor Car Co., Louisville, Ky.
Toledo Motor Truck Co., Toledo, O.
Universal Motor Truck Co., Detroit, Mich.
Van Winkle Gin & Machine Co., Atlanta, Ga.
V. C. Motor Truck Co., Lynn, Mass.
Victor Motor Truck Co., Buffalo, N. Y.
Weber Auto Truck Mfg. Co., Louisville, Ky.
Westfield Motor Truck Co., Westfield, Mass.
White Star Motor & Engineering Co., Brooklyn, N. Y.
Waverley Co., Indianapolis, Ind.
Witt-Will Co., Washington, D. C.
Willys-Overland Co., Indianapolis, Ind.
Walker Vehicle Co., Chicago, Ill.
Woodworth Motor Truck Co., Providence, R. I.

Ross Differential Gears

are built as well as the famous Ross Steering Gears. It would pay you to investigate them.

Write for Catalog

ROSS GEAR & TOOL COMPANY
790 Heath Street LAFAYETTE, IND.



Magneto Money

SAVED BY BUYING NOW

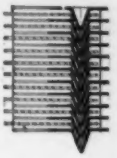
$30.00 for a **$105.00** 6 cylinder
$20.00 for a **$93.00** 4 cylinder
$18.00 for a **$65.00** 2 cylinder
$16.00 for a **$60.00** 1 cylinder

Imported U. & H. High-Tension Magnetos Less than Import Cost

Circular and Price Lists Free

J. S. BRETZ COMPANY
250 W. 54th Street
NEW YORK

"EVANS" MODEL
"HELE-SHAW" CLUTCH
(*Patented*)



Multiple Disc Running in Oil

The illustration shows wedge shaped annular grooved plates which engage smoothly, *have a grip like iron* yet are *slippable indefinitely.*

Phosphor-Bronze vs. mild steel.

In use on over 100,000 cars.

Send for Catalog No. 7 to-day, giving bore and stroke of motor

SHORTEST—BEST—CLEANEST
M & E GREASE CUPS
(*Patent Pending*)

Are Rapidly Becoming Standard of the World. The Top end of Spiral Spring acts as a pawl, catching in corrugations in the Top of cup—See top of spring marked "B". When cap is turned, the pawl slips from notch to notch and prevents vibrating loose. See notches marked "A". The cup can be freely moved with slight force in either direction. Used exclusively on all Packard and Pierce-Arrow Trucks and many others.

Write for catalog No. 23 now

Merchant & Evans Co., Philadelphia
(*Premier Metal House in America*)

Wheeling New York Chicago Baltimore Brooklyn Denver Cleveland Kansas City

A LOW PRICE WHEEL

is not cheap if its low price is secured at the expense of quality and construction.

Every wheel manufactured by us has to meet certain requirements—must be exactly right before it leaves our Factory—must represent the highest quality possible to produce.

The construction of THE SCHWARZ WHEEL insures its STRENGTH, SAFETY, and ECONOMY—the interlocking spokes — the tight, immovable center assemblage, which the most severe strain cannot loosen. It is the only wheel in which spokes cannot work loose—the only wheel which will always run true.

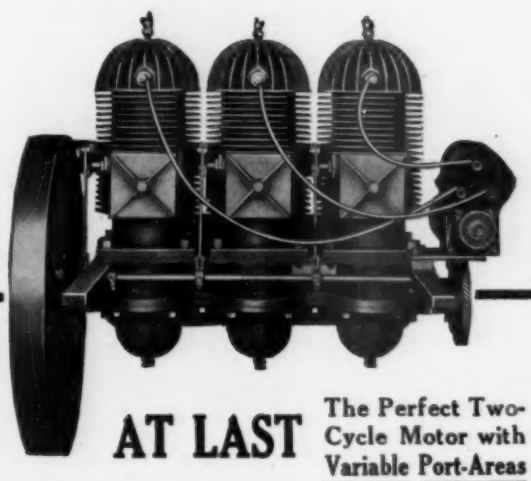
THAT IS WHY

all the leading motor trucks are equipped with

SCHWARZ WHEELS

Consult us on design and proportions.

THE SCHWARZ WHEEL CO., Frankford, Phila.



AT LAST
The Perfect Two-Cycle Motor with Variable Port-Areas

The essential feature of Moore Motors is the increasing or decreasing of all the port-areas simultaneously (fully patented), giving flexibility of control and fuel economy.

(Fixed ports, as in regular two-cycle design, mean lack of flexibility and high fuel consumption.)

The result is a power plant combining two-cycle simplicity and low upkeep cost, with four-cycle flexibility of control and fuel economy.

Moore Motors are backed by years of engineering experience. Send for descriptive circular.

PALMER-MOORE COMPANY
SYRACUSE, NEW YORK

Motor

Lauth Juergens

Trucks

Are Guaranteed For Life

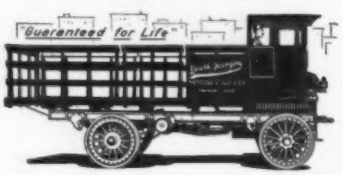
WHAT MORE CAN WE SAY?

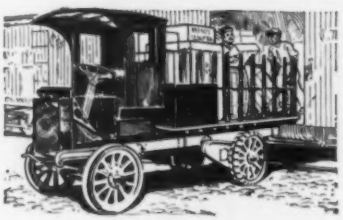
Made in 1, 2, 3 and 5-Ton Sizes

Send for Catalogue

The Lauth-Juergens Motor Car Co.

FREMONT, OHIO

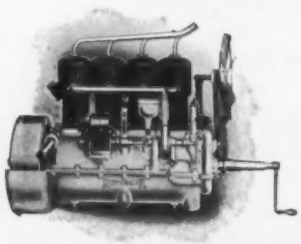




Truck Satisfaction

depends upon the performance of the motor. For heavy traffic or light, high speed or low,

THE RUTENBER MOTOR



is the most dependable. Simple in construction, silent, powerful and speedy, the RUTENBER is the most economical and efficient engine for commercial cars. It is found in half a dozen of the best trucks on the market today. It should be in yours. Write for booklet.

The Rutenber Motor Co., Marion, Ind.

PRESSED STEEL

FRAMES

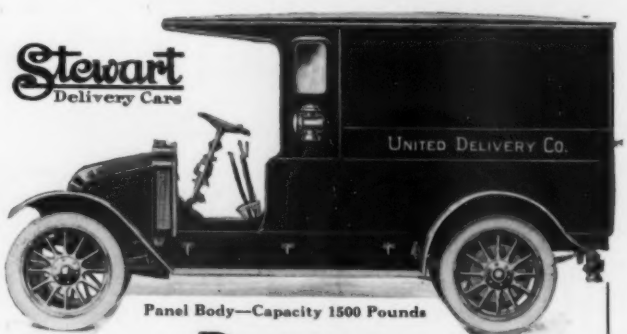
FOR TRUCKS

Handsome, Light, and more enduring than those made of rolled channel

A. O. SMITH COMPANY

MILWAUKEE

Stewart Delivery Cars



Panel Body—Capacity 1500 Pounds

DEALERS:

Are You Alive to the Money in Stewart Delivery Cars?

There are big money-making possibilities for dealers in handling Stewart Delivery Cars. Thousands of merchants are already convinced of the value of motor delivery service. Read these five reasons. They will convince you that sales will be easy and profits sure.

1. **No Seasons:** The dealer can sell Stewart Delivery Cars every month in the year.
2. **No Trading:** Delivery cars are never out of style. So long as the car runs, the merchant will use it. Instead of having to take old cars in trade, every car you sell is a help toward selling additional ones to the same buyer.
3. **Small Expenses:** Fancy salesrooms unnecessary; no joy riding; no expensive entertainment; no second-hand cars in storage running up your investment.
4. **Easy Sales:** It isn't a question of getting merchants to adopt motor delivery, but to show them the right car. We have it. If their competitor buys them, they must buy to keep up with the race.
5. **Repeat Orders Insure a Steady and Growing Business:** The sale of one car to any merchant with several delivery vehicles is sure to lead to other sales.

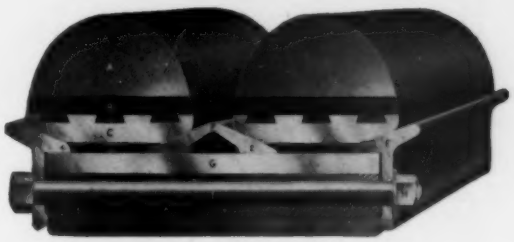
Write for our literature, and liberal proposition to live dealers.

Stewart Motor Corporation, Buffalo, N.Y.

T. R. Lippard, Pres. and Mgr.; R. G. Stewart, Vice-Pres. and Chief Engr.
R. P. Lents, Secy. and Treas.; Robt. W. Ingersoll, Sales Mgr.

Separate from and having no connection with the Lippard-Stewart Motor Car Co.

The
United States Standard Motor Truck Tire
(Demountable)



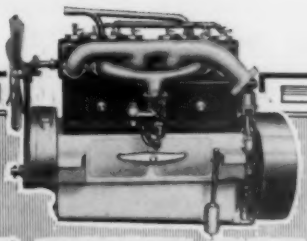
has established standards of tire economy never before known.

No more delays while tire replacements are being made. Changes can be made by the driver **anywhere** in fifteen minutes' time or less.

Guaranteed for 10,000 miles if used in one year.

Write us for descriptive literature.

United States Tire Company
New York



WAUKESHA
4¼×6¾ LONG STROKE TRUCK MOTOR

THE Waukesha Long Stroke Truck Motor is designed solely to meet the requirements of truck service and so solves with maximum efficiency the truck user's delivery problem.

It is the truck manufacturer's strongest justification for re-orders. Its positive, definite, unvarying efficiency under all working conditions gives the purchaser of the first truck a totally new idea in truck service that makes your hold on his future truck requirements a foregone conclusion.

Exclusive processes in metals used gives the Waukesha strength unapproached by any other motor. The crankshaft has a tensile strength of 140,000 lbs. to the square inch. The bearings have greater resistance than the best Parsons' White Brass. The unusual strength of these two features is but an index to the character of the motor as a whole.

As a progressive manufacturer of trucks you should at least know all about the Waukesha. Your request will bring full information.

WAUKESHA MOTOR CO.
WAUKESHA Dept. A. WISCONSIN

AN EXCEPTIONAL MOTOR

"Reliable Springs are More important on Commercial Cars than on Pleasure Cars."

THE PERFECTION SPRING CO.
Cleveland - - - - - - Ohio

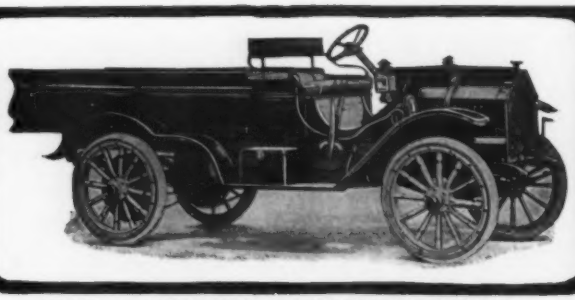
A prominent Truck Manufacturer said:

"We are using several of your 'Gaylor' truck grips here at the factory and have distributed a number of them among truck owners in this vicinity. We believe it is a good grip and it certainly served its purpose during the very bad weather existing in the past."

Don't wait until your car is stalled before ordering a set—get them now and insure your delivery record. The tool box will carry them.

Catalogue on request

Atlas Chain Company
Bush Terminal No. 4
Brooklyn, N. Y.

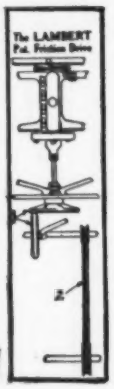


THE LAMBERT MOTOR TRUCK

The first investment is not the most important consideration in the purchase of a motor truck. It is important that you study the construction—what will it cost you in time and money to get like results from different types of cars?

The Lambert Patented Friction Drive will give you more service at less expense than any truck built. This is apparent by studying the illustrations in this advertisement. That on the left shows the usual form of power transmission. That on the right the **Lambert Patented Friction Drive.** Six expensive complicated units, as compared to two simple components. Granted that the results from the gear transmission are equal to the friction, which is the more economical? The cost of lubricating oil alone in the one on the left, will amount to more than the replacement of parts on the **Lambert Friction Drive.**

The Lambert is trouble proof, and cannot be damaged by carelessness or inexperience. It overcomes the chief objection to commercial cars.



We have prepared some very interesting literature for you. A card brings it to you.

The Buckeye Manufacturing Co.
146 Columbus Avenue
ANDERSON, INDIANA

MERCURY TRUCKS

1000 lbs. Capacity

The result of 10 years' experience proves it not an experiment.

You may as well buy now.

Our product is standard, changes are unnecessary, and there will be no yearly models.

Manufacturers not assemblers.

The Mercury Manufacturing Company
4106 S. Halsted Street, Chicago, Illinois

SPLITDORF MAGNETO

"Always There"

The establishment of SPLITDORF SERVICE STATIONS in connection with branch house and direct factory representation in the leading cities of the country, is going on apace.

This is in line with the SPLITDORF EFFICIENCY MAXIM, a maxim responsible for the changing around of factory facilities and a general branching out here and reorganization there, looking to a more compact unit for the production of SPLITDORF IGNITION devices and the SERVICE of the USERS.

Come to us with your ignition troubles—we will gladly shoulder all responsibilities for changes and adjustments and guarantee the greatest satisfaction.

Write for our "Racing Record"

SPLITDORF ELECTRICAL CO.
98 Warren Street, Newark, N. J.

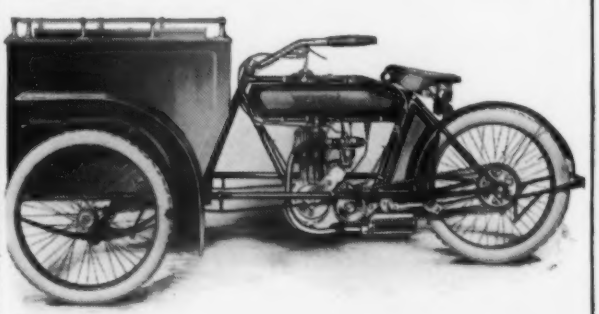
BRANCHES

New York, Boston, Philadelphia, Chicago, Detroit, Kansas City, San Francisco, Los Angeles, Seattle, London, Buenos Ayres

Less than $1.50 Per Day

Minneapolis Light Delivery Cars solve your delivery problems. We can prove to you that you can operate one of these cars at less than $1.50 per day, including everything—driver, gasoline, oil, tires, etc.

And will do the work of three horse-drawn vehicles.



Initial cost for complete car is only $375. Simple to operate, handles like an automobile. Write for details.

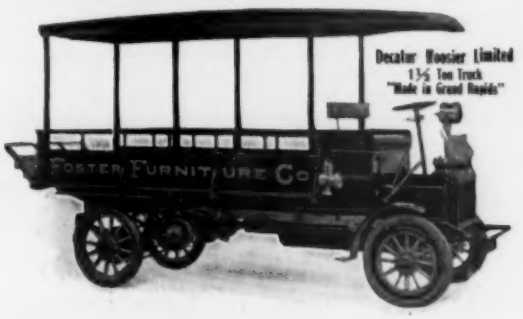
The MINNEAPOLIS MOTORCYCLE CO., Inc.
517 South Seventh Street, Minneapolis, Minn.

Decatur 1½ Ton Truck

The Truck with a reputation for

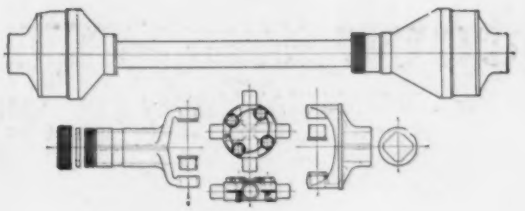
Economy Efficiency Durability

and Low Operating Cost



Our Trucks are used in 61 different lines of business. Write for catalog and complete specifications telling WHY DECATUR TRUCKS ARE BEST.

Grand Rapids Motor Truck Co.
Grand Rapids, Michigan



P-30 Drive

We supply single universals or drive shafts complete as shown. Forgings are special analysis steel, heat treated, machine work accurately done. Note extreme simplicity of design, insuring long life.

The Otto Konigslow Mfg. Co.
CLEVELAND
Sixth City
Sales Agents: THE ZINKE CO., Chicago

Motor Truck Bands

MADE WITHIN THE FOLLOWING

Dimensional Tolerances

(ADOPTED BY THE SOCIETY OF AUTOMOBILE ENG.)

1.—Tolerance in circumference of felloe band:

	Plus	Minus
Before application to wheel - - -	1-32″	1-32″
After " " " - -	1-16″	1-32″

Variation from precise measurement shall be uniform over entire width of band.

2.—Tolerance in width of felloe band:

	Plus	Minus
Up to and including 4″ - - - - -	1-32″	1-32″
4—1-16″ to 6″ - - - - - - -	3-64″	3-64″
6—1-16″ to 12″ - - - - - - -	1-16″	1-16″

3.—Variation in trueness of band when placed on surface plate: Band shall touch at all points within 1-32″ up to and including 6″ width. Over 6″ width within 1-16″.

4.—Variation in thickness of band: .006″ plus or minus.

5.—Trueness to round. The radial tolerance on the wheel when felloe band is applied shall be 1-16″ plus or minus. This plus or minus tolerance must not occur at diametrically opposite points. There shall be no flat spots or kinks in felloe band on the finished wheel.

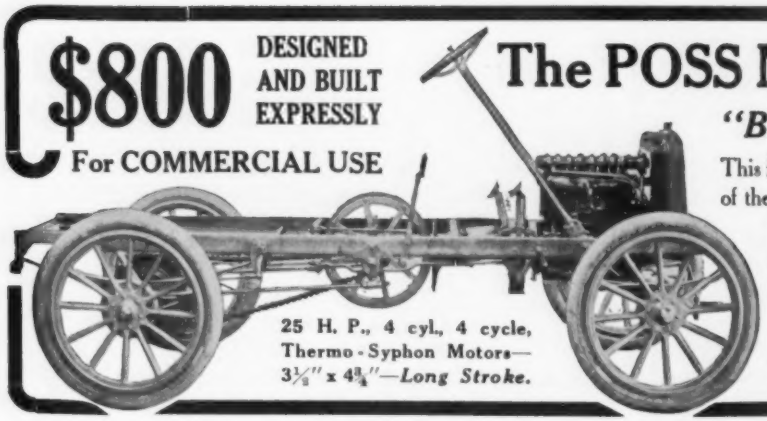
The Standard Welding Company
CLEVELAND
NEW YORK CHICAGO DETROIT

"HARTFORD" CONE CLUTCH THE BEST

Furnished with Double Set of Universal Joints. Clutch can be removed from car as a unit without disturbing other parts. We furnish either Pressed Steel or Aluminum Cone. Weight same. Complete equipment 30 lbs. Made in two sizes, 25-30 and 35-40 H. P. Price is Right.

HARTFORD AUTO PARTS COMPANY
HARTFORD, CONN.
The J. S. Bretz Co., New York, Detroit, Sole Selling Agents

$800 DESIGNED AND BUILT EXPRESSLY For COMMERCIAL USE



25 H. P., 4 cyl., 4 cycle, Thermo-Syphon Motors—3½" x 4¾"—*Long Stroke.*

The POSS MOTOR WAGON

"Built for THE PURPOSE"

This is the secret of the Power, Strength and Durability of the Engine and Chassis of the Poss Motor Wagon. It is not a converted pleasure car. It has not a pleasure car engine. It has not a pleasure car transmission. It is a Power Wagon, with Power.

Wide-Awake, Hustling Agents Wanted
Send for our Proposition To-day

THE POSS MOTOR CO., 506 Howard Street Detroit, Mich, U. S. A.

SEAMLESS

MOTOR TRUCK GASOLINE TANKS

LEAKLESS

STRONG AND STURDY FOR ROUGH SERVICE
ALL SIZES IN STOCK

AIR PRESSURE RESERVOIRS FOR SELF-STARTERS AND GARAGE TIRE FILLERS

New Catalog Now Ready—Write Us

COMPRESSED AIR MOTOR TRUCK STARTERS COMPLETE

BUCKEYE Motor Truck Jacks

Buckeye Motor Truck Jacks are safe, reliable and made to stand the wear and tear for which they are intended. They are fully guaranteed, and cannot possibly drop with a load. They are made from Steel Drop Forgings, best finish and workmanship throughout.

Get our prices before you place your orders for jacks, we can save you money.

No.	Height Bar Down	Raise of Bar	Height Bar Up	Weight	Capacity		List Price
7	11¼"	6½"	18"	16 lbs.	2½ tons	with formed handle	$10.00
13	14¼"	7½"	20½"	26½ "	3 "		15.00
14	14¼"	7½"	20½"	33 "	5 "		16.00
9	11½"	6"	17½"	10 "	1½ "		6.00

Write today for descriptive catalog. Made only by

THE BUCKEYE JACK MFG. CO., Alliance, Ohio

The

Commercial Car Journal

is the logical paper for every man to read who contemplates buying or selling commercial motor cars.

It is brimful of essential information.

The Commercial Car Owner will also find many suggestions in it that will make his driving more efficient.

Send for a sample copy

Commercial Car Journal

Market & 49th Sts. - - Philadelphia, Pa.

To Manufacturers of Commercial Vehicles:—

Have you considered the important advantages of using the American made New Departure ball bearings in your new models?

It is a significant fact that many manufacturers of motor trucks have done so and after testing them out, have **contracted** with us for their requirements.

Take a short cut to a quick discussion of your bearing problems by sending us your blue prints and data. You will receive by return mail our catalogue-treatise, written by our staff of engineers. This will be followed quickly by a letter from our chief engineer frankly stating the result of his study of your bearing requirements, with a view to securing maximum efficiency at minimum installation and maintenance cost.

Write today. It will save your time and expensive experimenting.

THE NEW DEPARTURE MFG. CO. :: **Bristol, Conn.**

WESTERN BRANCH: 1016-17 FORD BLDG., DETROIT

WESTON MOTT CO

FLINT, MICH.

AXLES, HUBS, RIMS

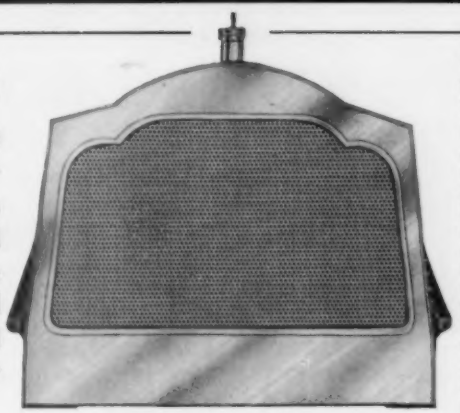
OF HIGHEST QUALITY

Strength and durability are factors of the utmost importance and our products are made to meet the severest tests.

FEDDERS

Real Square Tube Radiators

¶ Commercial cars require radiators that will stand many shocks and much hard usage. This was one of the weak parts of the commercial car but the test of time has proved that FEDDERS radiators render efficient service.



¶ We want to figure with you your requirements for the coming season. If you haven't used Fedders radiators you probably have had a great deal of radiator trouble and you may think that their isn't a radiator built that will give you satisfaction. If this is the case we would like to have an opportunity of demonstrating that the Fedders radiator will stand the wear and tear and shocks of the commercial car and that manufacturers who equip their commercial cars with the Fedders have practically no radiator trouble. We can convince you. Will you give us the opportunity?

FEDDERS MFG. WORKS

BUFFALO :: NEW YORK

THE KINSEY MANUFACTURING CO.

TOLEDO, OHIO

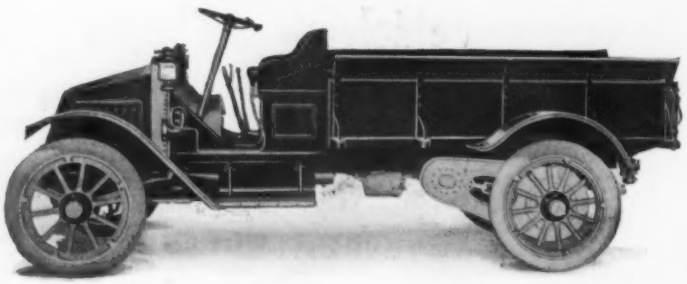
Manufacturers of Auto Parts—

Kinwood Radiators, Fenders

Kinwood Oilers, Gaskets

Kinwood Steel Frames, etc., etc.

SPECIAL METAL STAMPINGS



"Sandusky" Model "B" 1500 lb. Delivery Truck

Long stroke, 4-cylinder motor, 30 H. P.
Selective sliding gear transmission.
120 inch wheelbase.
Double chain drive.
Chains enclosed in aluminum cases.
Center control, left-hand steering.

PRICES:

Chassis - - - -	$1400.00
Chassis with Express Body -	1475.00
Chassis with Covered Delivery Body	1500.00

DEALERS:—Write for agency proposition. Do it now. It is the best buy in the world today.

Sandusky Auto Parts & Motor Truck Co.
Sandusky, Ohio, U. S. A.

THE W. F. STEWART CO.

ESTABLISHED 1881 INCORPORATED 1898

FLINT, MICHIGAN

WE BUILD BODIES

for both pleasure and commercial vehicles, and can give you goods and service that can be depended on. The price, too, will be right. Get in touch with us.

"DISCO" = MEANS ADDED PROFITS FOR THE MOTOR TRUCK OWNER

ECONOMY is the chief reason for the employment of motor wagons for delivery service. Why not secure still GREATER ECONOMY?

THE FAMOUS

DISCO SELF STARTER

is saving dollars every day for those wise merchants who have equipped their commercial motor cars with this **sure, dependable** and **most efficient** motor starter. Disco saves gasoline consumption—stops vibration of delicate machinery parts—eliminates cranking—cuts down depreciation. It is easily and quickly installed on any multiple cylinder motor.

Specify the DISCO on your new trucks and equip your present delivery cars with the Disco as thousands of truck owners have already done.

WRITE US FOR FULL PARTICULARS

708 Dodge Building, IGNITION STARTER COMPANY, Detroit, Mich.

AUTOMOBILE TUBING

Seamless Brass and Copper Tubing

of all kinds,—any size, any gauge, any temper
From ½″ down to the finest.

We are supplying many of the largest and best automobile concerns in the country with tubing. Why not let us quote you on your requirements? Our **QUALITY** is guaranteed,—our prices are low as quality will allow, and prompt deliveries are guaranteed. Could you possibly ask for more? **Correspondence solicited.**

ROME HOLLOW WIRE & TUBE COMPANY - Rome, New York

Ford
THE UNIVERSAL CAR

ANNOUNCEMENT

The most remarkable price change of the automobile epoch will come into operation October 1st, 1912. It has been made possible by the gigantic increase in Ford production. And it brings the matchless Ford well within reach of the average income.

Runabout - - - - - -	$525
Touring Car - - - - - -	600
Town Car - - - - - -	800

These new prices, f. o. b. Detroit, with all equipment. An early order will mean an early delivery. Get full particulars from Ford Motor Company, Detroit, Mich.

This ad is worth $1.00 cash

Be Up To Date

Gasoline motors are as much out of date without the **Egyptian Mixer** as they are without **Magnetos.** We guarantee a 10% saving of fuel, and a **better motor.** Write for electro copy of letter from Continental Motor Co., etc. Try the **Egyptian Mixer** before you get a **New Carburetor.** Then you will not have to change. Slips in manifold above or ahead of carburetor. Can be installed in 15 minutes. Nothing to change or alter. The **Egyptian Mixer** will only cost you $2.00 if this ad is clipped and forwarded to us with P. O. Money Order for $2.00, but will ***not*** be accepted as such after Nov. 16, 1912. Now is **your opportunity** to obtain one guaranteed $3.00 **Egyptian Mixer** for $2.00. **Remember** this ad is worth $1.00 to you, and is only done to introduce—afterwards, it will cost you $3.00. ***Good Agents Wanted.***

In ordering give size of carburetor, make of car or engine.

The R. D. Loose Mixing Chamber Co.
110 North Fifth Street, SPRINGFIELD, ILLINOIS.

"ASK AN OWNER"

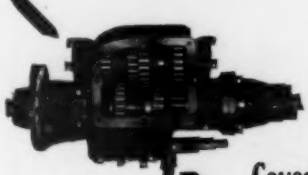
CCJ

COVERT

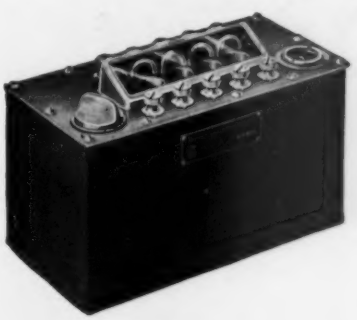
The efficiency of Covert Unit Transmission Plants has been proven. You are not experimenting when you equip your cars with the COVERT. We guarantee every one. This part of your car you can safely leave with us.

Our manufacturing plant is equipped with tools and machinery designed for a single purpose,—building transmissions. This enables us to produce highest quality at a cost lower than you can make them yourself.

May we figure with you on your plans?



Covert Motor Vehicle Co.
Sales Office: Ford Bldg.
Detroit, Mich.
Factory: Lockport, N. Y.



Detroit Oilers have no ball checks

There are no check valves or other complicated parts in Detroit Mechanical Force Feed Oilers to give trouble and cause failures. Every drop of oil **must** go to the place where it is needed.

A separate pump for each feed measures the oil and insures a rate of feed that is **exactly** right at all times. Once properly regulated there is no chance for faulty lubrication and dry bearings, carbonized cylinders, smoke at the exhaust and wasted oil are entirely eliminated.

Detroit Oilers are made with from one to thirty feeds in capacities of two pints to five gallons—pulley, sprocket, ratchet or gear drive.

Made also with two compartments for feeding one kind of oil to cylinders and another to the bearings.

Write today for catalog P-67 and full information.

DETROIT LUBRICATOR COMPANY.
DETROIT, U. S. A.
Largest Manufacturers of Lubricating Devices in the World.

In addition to saving power and wear with every revolution, the worm gear drive of the Pierce-Arrow Truck eliminates the necessity for the almost daily adjustments, repairs and lubrication required by other drives.

PIERCE-ARROW
5-TON MOTOR TRUCKS
THE PIERCE-ARROW MOTOR CAR COMPANY, BUFFALO, N. Y.

Remy Magneto

Exchange Your Old Magneto for a New Remy

IT will cost you practically no more than what you will be forced to pay out for constant repairs on your present ignition system. A new Remy will give your car new life. Here is our exchange proposition:

	List Price	Allowance	Net to You
2-Cylinder Remy Magneto with Coil, complete	$46 00	$ 9 20	$36 80
4-Cylinder Remy Magneto with Coil, complete	50 00	10 00	40 00
6-Cylinder Remy Magneto with Coil, complete	52 00	10 40	41 60

Allowance made for any make of Magneto

Remy Electric Company
Anderson, Indiana

BRANCHES:—New York, Boston, Detroit, Chicago, Kansas City, San Francisco, Indianapolis.

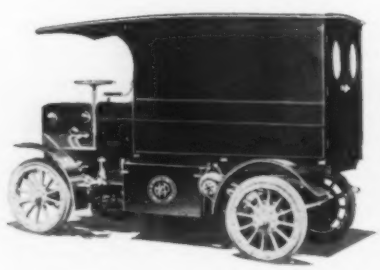
SERVICE STATIONS—Albuquerque, Augusta, Baltimore, Charlotte, Cincinnati, Cleveland, Denver, Dallas, El Paso, Houston, Jacksonville, Louisville, Memphis, Minneapolis, New Orleans, Nashville, Norfolk (Va.), Omaha, Los Angeles, Philadelphia, Pittsburgh, Portland, (Me.), Portland (Ore.), Rochester, San Antonio, Seattle, Spokane, St. Louis, Syracuse, Utica, Washington (D. C.).

CANADA—Toronto, Winnipeg, Calgary, Hamilton, Vancouver, Montreal.

M&P ELECTRIC VEHICLES · DETROIT ·

"Made to Make Good and It Does."

Electric Delivery Vehicles
1000 lbs. and 2000 lbs.
100% Service



Write for New Catalog—now ready

M & P Electric Vehicle Co.
Detroit, Michigan

For Your Trucks And Delivery Wagons—

Quick-Acting Brakes

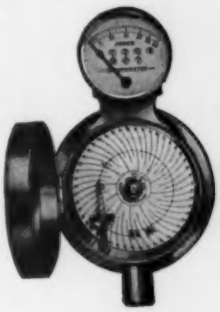
In crowded streets, on the hills, at the corners and track-crossings—that's when you need efficient brakes. The ***best*** are

DUPLEX EXTERNAL BRAKES

Largest surface. Act backward as well as forward. Slight pressure does the trick. If you've had brake trouble, write us!

THE ROYAL EQUIPMENT COMPANY
484 Housatonic Avenue
Bridgeport, Conn.

We also manufacture Raymond Brakes, Raybestos Friction Facing, and Gyrex, The Mixer.



It Tells You Just What Your Drivers Do—

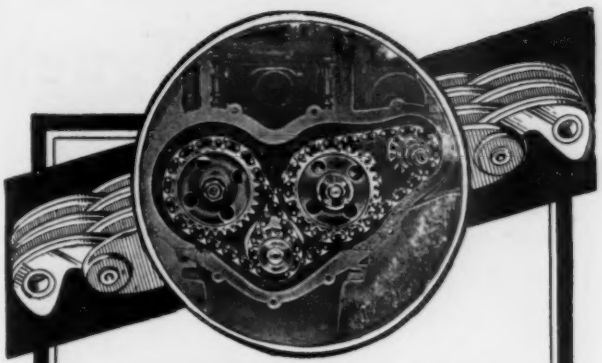
The JONES Recorder gives a complete and authoritative record of **every movement** of your truck or delivery wagon. Tells how fast and how far vehicle travelled. How often it stopped and duration of each stop. When the vehicle started and when it returned.

You are able to keep a systematic cost record if you use

Jones Recorder

THE JONES RECORDER

Broadway and 76th Street **New York**



Coventry Noiseless Chains as Used on "Benz" Engines

COVENTRY

NOISELESS CHAINS

Have been the standard of Europe for many years. These chains run with remarkable accuracy and precision, their construction and design make them positive and flexible.

Standard equipment on the following cars: **Daimler, Deasy, Humber, Maudslay, Benz, Arrol-Johnson, Vauxhall, etc.** Write for full description and details.

UNITED STATES REPRESENTATIVES:

Sarco Engineering Co., 110 Broad St., N. Y.

G. V. Trucks at the Two Electrical Shows

At the **Boston Electrical Show, Sept. 28th-Oct. 26th,** you will find the General Vehicle Company's exhibit in spaces 157, 158, 159 and 160. There will be a 5-ton truck sold to Massachusetts Breweries (Inc.), a 2-ton Pureoxia Ginger Ale Truck, a 2-ton truck for C. A. Ketchum, Hay & Grain, a 750-lb. chassis and a 1-ton Industrial Truck.

At the **New York Electrical Exposition, Oct. 9th-19th,** you will find our exhibit in spaces 45 and 46. Here we will show a 3½-ton truck built for Arnold Constable & Co., a 1000-lb. wagon built for Black, Starr & Frost (one of three) and a 1-ton Industrial Truck. There will be other G. V. Machines on the demonstration track, 5th floor.

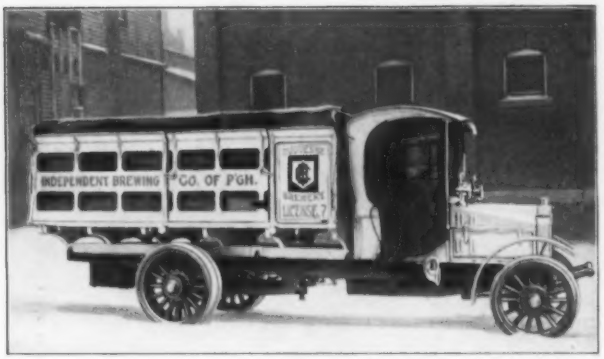
Don't fail to see one or both these exhibits.

"We sell the fleets." Shipped 102 G. V. Electrics in September.

Write for Catalog 84 and other data.

GENERAL VEHICLE COMPANY, PRINCIPAL OFFICE AND FACTORY LONG ISLAND CITY, N. Y.

NEW YORK CHICAGO BOSTON PHILADELPHIA ST. LOUIS



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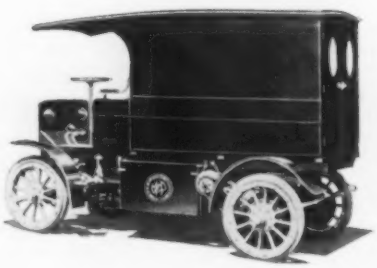

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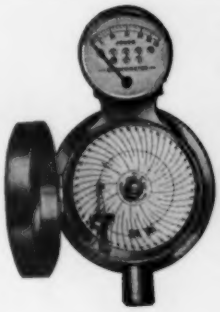

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NEW YORK CHICAGO BOSTON PHILADELPHIA ST. LOUIS

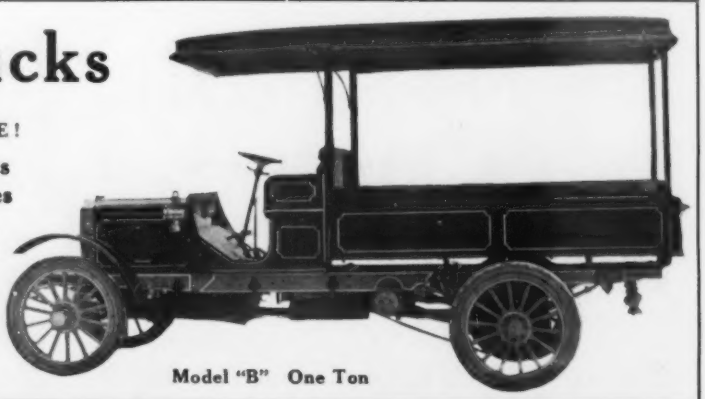
Atterbury Trucks

DELIVER THE GOODS!
THE PERFECTLY BALANCED MACHINE!

Gasoline and Electric Delivery Cars
Motor Trucks Hotel Omnibuses

Write for catalog and details. We are pioneers and can supply any size or type for your purpose.

Atterbury Motor Car Co.
BUFFALO, N. Y.



Model "B" One Ton

BOLLEE LAUTH-JUERGENS RANDOLPH SEAGRAVE KISSEL GRAND RAPIDS SCHNEIDER KINNEAR PEERLESS RENAULT

ADLERWERKE

BALL BEARINGS

"INSURANCE FOR BUILDER AND USER"
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GRINDING HEALD MACHINES

HAVE YOU READ "OVERSIZE STANDARDS *for* PISTONS and RINGS?"

It is a mighty interesting little book issued by THE HEALD MACHINE CO., 12 New Bond St., Worcester, Mass., and tells how scored or worn cylinders can be made as good as new at a small expense.

It also explains how the making of standard oversize parts would cut down the cost of maintenance of a motor car.

It is something every automobile man should read

Copies sent free on request

Adams Trucks
"Deliver the Goods"

Right design plus right building means right running. There are no experimental features about an ADAMS TRUCK. From engine to wheels it is built along proven lines. There is not a better engine made, and better material or better workmanship than is used throughout the truck cannot be bought. It is the product of a factory established more than 45 years ago—in itself a guarantee of quality.

Write for details. Agents, we are now making 1913 contracts.

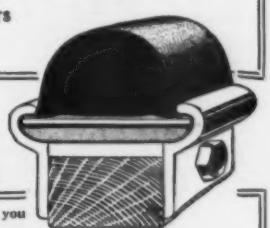
THE ADAMS BROS. COMPANY
FINDLAY, OHIO

REPUBLIC MOTOR TRUCK TIRES

Just as a chain is no stronger than its weakest link, so a truck is no more efficient than its tires.

Republic Motor Truck Tires will increase the efficiency of your trucks by keeping them on the road day after day, by cutting down the cost of maintenance.

Let us show you in dollars and cents.



THE REPUBLIC RUBBER CO.
YOUNGSTOWN, OHIO

These Branches and Agencies will supply you with truck tires and truck tire service:

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Chicago, Ill.	The Republic Rubber Co., 1732 Michigan Ave.
Cleveland, Ohio	The Way-Mitchell-Rigdon Co., 5919 Euclid Ave.
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Kansas City, Mo.	Bart S. Adams, 1513 Grand Ave.
Los Angeles, Cal.	Republic Tire & Rubber Co., 1227 S. Olive St.
Minneapolis, Minn.	The Republic Rubber Co., 1514 Hennepin Ave.
New York, N. Y.	The Republic Rubber Co., 229 West 58th St.
Philadelphia, Pa.	The Lyman Tire & Rubber Co., 328 N. Broad St.
Pittsburgh, Pa.	Lange Motor Truck Co., S. St. Clair and Eva Sts.
Rochester, N. Y.	Rochester Auto & Supply Co., 352 Main St., East
Salt Lake City	The W. C. Hendrie Rubber Co., 210 S. W. Temple
San Francisco, Cal.,	Republic Rubber Co. of Cal., Golden Gate Av. & Hyde St.
Seattle, Wash.	Republic Tire Co., 1425 Broadway
Spokane, Wash.	Interstate Rubber Co., 417 First Ave.
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Lyon Grips in Service

ORDER NOW
and Save 10 Per Cent

Most readers of this magazine need no introduction to LYON GRIPS. They have used them for at least a season—very likely two or three—and know their value for giving traction to solid tires in mud, snow, and ice.

To reduce our winter rush, we will give a special discount of

Ten Per Cent

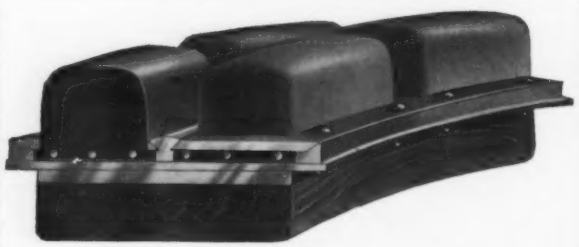
on all orders for Grips which reach us, complete with the necessary information as to sizes,

before October 20th.

Write at once for our Information Blank and 1913 prices. Lyon Grips save their price in a week when wet weather sets in. Get them now, be ready for the first storms, and save money.

We guarantee 1913 Lyon Grips for 2500 miles

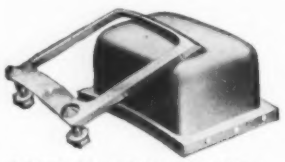
LYON NON-SKID COMPANY
433 N. Broad Street, Philadelphia, Pa.



The Individual Fastening Made It Famous

Sometimes it is the seemingly unimportant feature that makes an article famous.

So it was with this Individual Block Tire of ours—one of the seven types of Goodyear truck tires.



A Single Block With Its Individual Fastening

We build this tire so that **each block has its own fastening.** Others making block tires use a fastener that holds a **series** of blocks.

And here's the difference:

When the **ordinary** block tire needs a new block, the operator must remove the bolts and plate that holds several blocks. Moreover if the base of one of those several blocks is a trifle thicker than the others, **some** of those blocks are not tightly held. Thus they get loose and chafe at the base, and wear out before their time.

GOODYEAR
AKRON, OHIO

Individual Block Tire

a Non-Skid Tire for Heavy Trucks

Now, with this **individual** Block Tire of ours, it is only necessary, when a block needs replacing, to loosen **that particular** block. And anybody can do it **quickly** and **easily,** with no tools save a small clamp and wrench. And the Goodyear individual fastening holds the block absolutely **tight** against the tire rim. Blocks cannot work loose.

This superior method of fastening the blocks, more than anything else, put the Goodyear Individual Block tire in the lead, though the tire has half a score other good points.

Tires for Every Service

We now make no less than seven motor truck tires. No matter what kind of truck you may have, how big or little, how fast or slow it travels, what kind of work it does, what class of roads you use it upon, THERE IS A GOODYEAR TIRE EXACTLY ADAPTED TO THAT TRUCK.

Don't buy a new truck or new truck tires without seeing the Goodyear line. Our engineers have built some wonderful truck tires and you ought to know them and compare them with others.

Write us today and you will receive by next mail a large, handsome, illustrated Folder that shows our entire line of truck tires.

The Goodyear Tire & Rubber Co.

AKRON, OHIO

Branches and Agencies in 103 Principal Cities

We Make All Kinds of Rubber Tires, Tire Accessories and Repair Outfits.

Main Canadian Office, Toronto, Ont.

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You take no chances in buying Gould Batteries

Johnnie bought a guaranteed firecracker. Salesman said: "If it doesn't make more noise than any other you ever bought I'll give you another at half price." The cracker looked fine. The fuse sizzled gloriously. But—it didn't shoot! Straightway Johnnie paid more good money for the other. It, too, failed. The guarantee worked but the crackers didn't. Johnnie learned a lesson—went back to crackers promising less but more reliable.

When you are offered a storage battery at several times the first cost of a Gould remember Johnnie's experience. You're not interested in helping to produce enormous profits for makers of unproven experimental batteries. A first cost three times as high as Gould's should mean three times as good performances. It doesn't. And don't permit your doubts to be salved over by a guarantee that short-lived batteries will be replaced by others at a pro rata rate. You are thus compelled to put out more money and tie yourself up to similar renewal troubles again. Gould batteries are sold at the price of **one battery each** and liberally guaranteed to serve out their time without troubles, leaving the customer free to pick what renewals he wants. We are safe in this because we **know** he will want Gould renewals.

Make a salesman show you. Ask him for evidence of years of splendid performances like those which have popularized Gould Batteries. Fact is, actual service performance of Gould's is far ahead if you are looking for **ultimate** economical performance. The Gould Battery is the lightest per ampere-hour capacity, occupies least space, maintains high capacity longer, is longer-lived and requires less attention than any other. Rather than take our word, investigate Gould Batteries in your own neighborhood. We'll help you find them if you wish. If the user has had previous experience with other batteries all the better—ten to one he will be more enthusiastic for Gould's.

Gould Storage Battery Co.

General Offices: 341 Fifth Ave., New York

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Agents in Washington, D. C.; Kansas City, Mo.; Denver, Col.; Detroit, Mich.; Topeka, Kan.; Los Angeles, Cal.; Seattle, Wash.
Full stock carried in all cities where we have offices or agents.

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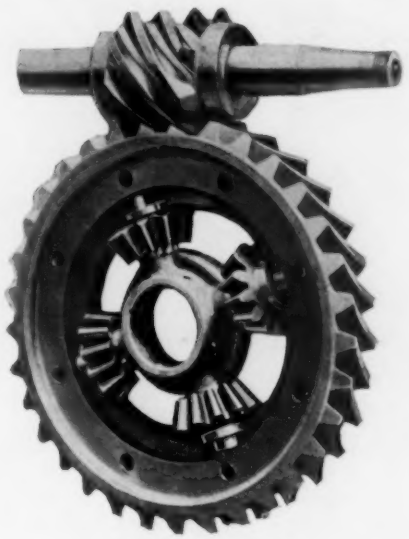


Cramp's Gear Bronzes for Rear Axle Drive

THE modern up-to-date drive for both touring cars and trucks is a steel worm and a bronze worm wheel. Our gear metals long ago passed the experimental stage. We have been manufacturing worm drives for nearly 100 years for all kinds of machinery from turret turning gear to lifting bridges, elevators, marine railways, etc., and we are now furnishing our worm gearing for automobiles.

Our metals will better resist wear and abrasion, have longer life and higher efficiency than any other gearing metals and have the great strength necessary to resist the heavy starting torque. They are designed to withstand excessive strain and shock and this strength is given to them without impairing their wearing and antifrictional qualities.

There is no need of importing bronze wheels for worm drives.

We manufacture better material and you save DUTY, FREIGHT and TIME.

The William Cramp & Sons Ship & Engine Building Co., Philadelphia, Pa.

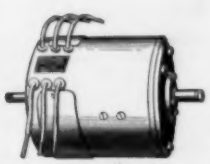
The Electric is the Reliable Truck

GREAT reliability results from the extreme simplicity of the electric's construction. The only moving part of the power mechanism is a strong and rugged motor armature. A very little attention is assurance against trouble from any source. And if your truck has a

Westinghouse Motor

you know that the power mechanism is the most reliable that can be obtained.

Westinghouse vehicle equipment is the result of long and careful study of every phase of electric vehicle service. The Westinghouse Company has been building the most successful vehicle motors ever since electrics were first used, and every year has seen some improvement,—another step towards greater reliability.



Westinghouse motors today give maximum service.
See that your truck has Westinghouse equipment.

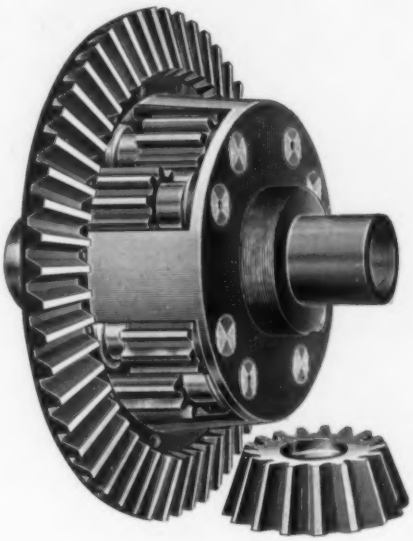
Westinghouse Electric & Manufacturing Co.

Offices in 45 American Cities **EAST PITTSBURGH, PA.**

CULLMAN SPROCKETS and Differentials

in stock and to order.

Send for catalog and let us quote you on your requirements.



CULLMAN WHEEL COMPANY, CHICAGO
1351 GREENWOOD TERRACE

Truck Economy is Dependent

Upon Knowledge of Truck Mileage

Veeder

Hub Odometer

$25

At Your Dealer's or Direct from Factory

You, as a commercial car user, must look upon the money paid for trucks as just as much of an investment as money paid out for supplies, additions, stocks, etc., and *you should insist on a proper return from this investment as well as upon the others.*

To make your truck investment pay it is ***absolutely essential*** that accurate records be kept of the distance the truck travels. By such records, and only by these records, can you check your tire guarantee, your drivers' capabilities, gasoline and oil consumption per mile, cost per ton for each mile, etc., etc.

The VEEDER HUB ODOMETER will do this necessary work for you. It registers backwards as well as forward. It is sealed, so cannot be tampered with or altered. It simply takes the place of the regular hub cap and ***can be attached by any mechanic.***

No Intricate Wiring, No Cables No Magnets, No Tubes

All we need to know is make, model, size of wheel and year of manufacture of your truck. We ship the HUB ODOMETER to you and you do the rest. Being made by the Veeder Manufacturing Company, whose recording instruments are world-famous in all lines of business, is a sufficient guarantee that the VEEDER HUB ODOMETER is simple, accurate and durable.

Send for Catalogue D, descriptive of HUB ODOMETER.

The Veeder Manufacturing Co., Hartford, Conn.

Makers of Cyclometers, Odometers, Tachometers, Tachodometers, Counters and Small Die Castings.

VANADIUM

The Anti-Fatigue Steel

Vanadium Steel Crankshaft
Elastic Limit, 110,000 lbs.

Vanadium is the most powerful metal yet discovered for alloying with steel.

Vanadium steels are stronger; have greater endurance under repeated stresses and shocks; are more resilient and tougher; respond better to heat treatment and wear longer than steels without vanadium.

Our Ferro-Vanadium is the Standard for Making Vanadium Steel

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Largest Manufacturers of Vanadium Alloys in the World. Immediate shipment—any quantity.

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LAVIGNE

Steering Gears

POSITIVELY

No Back Lash
No End Thrust
No Loose Parts

Takes Up Automatically

FOR TRUCKS
DELIVERY WAGONS
TAXICABS

Positive
Compact
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Irreversible

THE LAVIGNE GEAR CO.
Corliss, Wisconsin

THE AMERICAN GROWTH OF Hess-Bright Ball Bearings

Successive homes of the

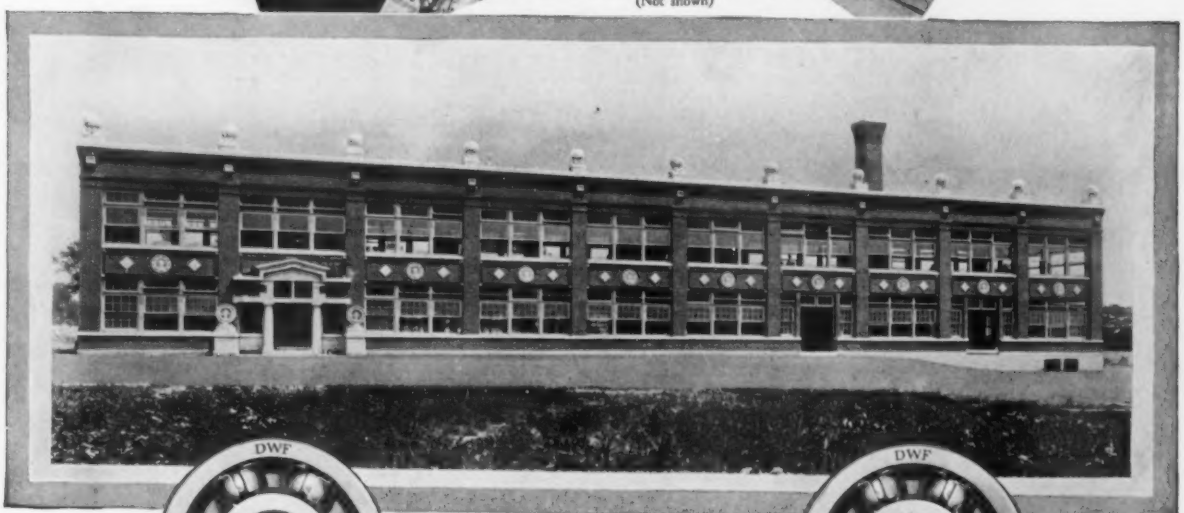
HESS-BRIGHT MANUFACTURING COMPANY

1904 to 1912

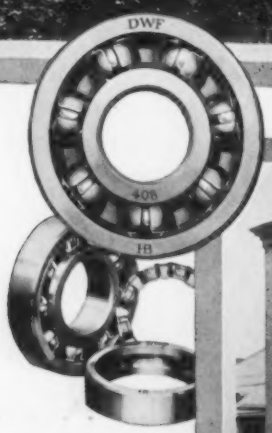
1904 to 1905
Room 606, Pennsylvania Building, Philadelphia, Pa.

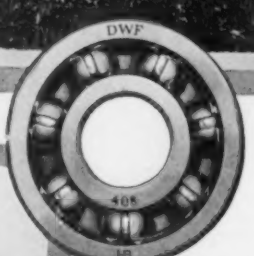
1905 to 1906
245 N. Broad St., Philadelphia, Pa.
(Not shown)

1906 to 1908
19th and Hamilton Sts.
Philadelphia, Pa.



1912
S. E. cor. Front St. and Erie Ave., Philadelphia, Pa.

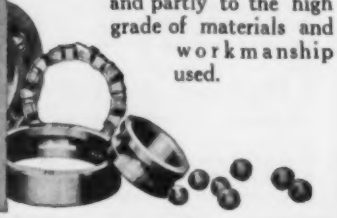




1908 to 1912—21st and Fairmount Ave., Philadelphia, Pa.

The causes of HESS-BRIGHT success are found in the enduring quality of the bearings themselves.

This quality is due partly to the patented slotless design, which prevents damage arising from end thrust and misalignment, and partly to the high grade of materials and workmanship used.



TWO NEW CATALOGS
ON ELECTRIC VEHICLE BATTERIES

Every Owner or Prospective Owner of an "Electric" Needs Them---So Does Every Electric Garage and Every Dealer in "Electrics"

CATALOG X

A most complete catalog of vehicle batteries of over 25 pages, covering the "Exide", "Hycap-Exide" and "Thin-Exide" Batteries, with illustrations of cells and of various parts and accessories. A new feature in this catalog is the condensed price list which simplifies the figuring of prices on new batteries or renewals.

CATALOG IC

A new catalog devoted to the "Ironclad-Exide" Battery, illustrating the plates, the assembly of cells and various parts and accessories. This catalog also contains a condensed price list which simplifies the ordering of new batteries or renewals.

A copy of each of these catalogs will be sent by addressing the Sales Office nearest you

THE ELECTRIC STORAGE BATTERY CO.

New York Boston Chicago
St. Louis Cleveland Atlanta Detroit

PHILADELPHIA, PA.
1888-1912

Denver San Francisco Seattle
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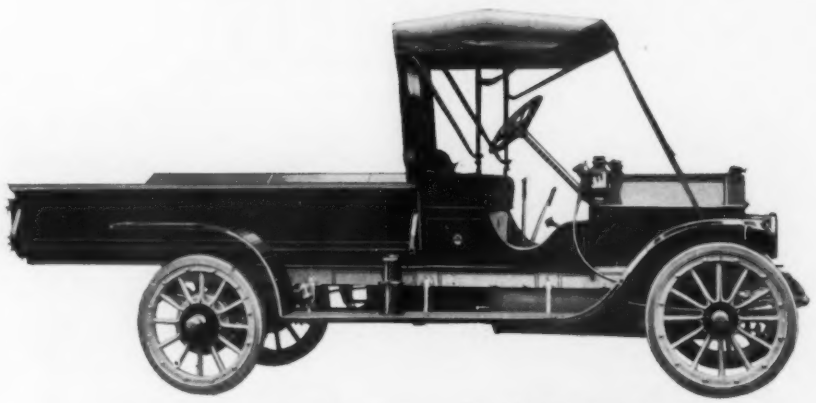
"Exide" Depots in New York, Philadelphia, Boston, Chicago, Cleveland, St. Louis, Atlanta, Denver Kansas City and San Francisco

860 "Exide" Distributors

"Exide" Inspection Corps

"The Menominee"
Motor Truck



1500 lbs. Carrying Capacity, $1200.00
2000 lbs. Carrying Capacity, $1500.00

The Commercial Car You Will Eventually Sell

The motor wagon having so thoroughly demonstrated its practicability and economy over the horse-drawn wagon, the dealer can no longer afford to put off the handling of it. Profits are wanted and the motor truck will prove the most profitable department in the future.

Built in two sizes, to carry 1500 lbs. and 2000 lbs. respectively, and of the very best material and workmanship; equipped with a strong 4-cylinder motor, sliding gear transmission and reduction gear in unit with the motor; shaft-driven (no chain to bother with or gather dirt), and all working parts absolutely enclosed and bathing in oil, "The Menominee" stands forth as the most practical motor wagon for delivering and light trucking.

It matters not where you stand at the present time on the motor truck proposition, you will eventually sell a medium-sized motor delivery car which is shaft-driven, strongly and neatly constructed. THE TRADE DEMANDS IT!

"The Menominee" is a beauty in design and meets the exact demand of the consumer. Fill out the attached coupon, mail to us, and we will send you our terms to dealers together with our ***free illustrated*** catalogue and show you why you should sell the "The Menominee" Motor Truck in your territory. DO IT NOW!

D. F. POYER & CO.,
Menominee, Mich.

Send your free illustrated catalogue, name your terms to dealers and show why the dealer should sell "Menominee" Trucks.

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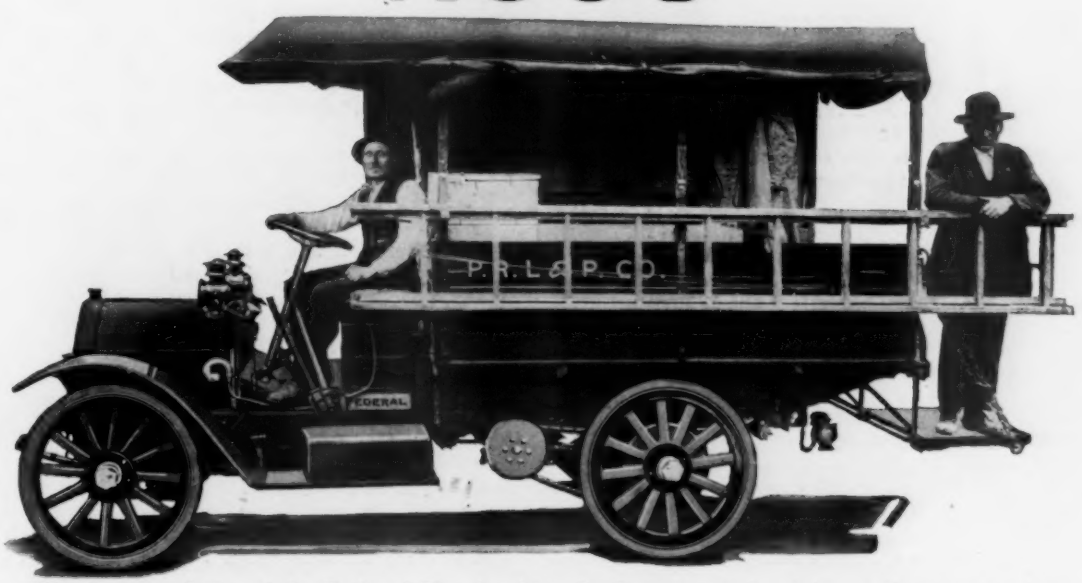
Street No. . . . . .
City . . . . . .
State . . . . . .

D. F. POYER & CO., Menominee, Mich.

THE FEDERAL
ONE TON TRUCK
$1800



This is one of the eight Federal Trucks (standard one-ton), kept in continuous service by the Portland Railway, Light and Power Company of Portland, Oregon

Federal one-ton chassis, including seat, $1800. Body type at purchaser's option. Wheelbase optional, 110-inch or 144-inch. Motor, 4 cylinders, 30 horse power. Magneto, high tension. Clutch, 16-inch cone. Transmission, three speeds forward and reverse. Tires, solid, 36 x 3½" front and 36 x 4" rear. Timken bearings.

The Federal Family is large and loyal which merely means that
THE FEDERAL
once established means many Federals

When a great manufacturer, or merchant or corporation follows the purchase of one Federal Truck with repeat orders for two and five and ten Federal Trucks, that means that not only has the Federal been tested and found good, but tested and found to be the best standard one-ton truck on the market.

Corporations who have bought one Federal are now buying fleets of Federals. They have reorganized and reconstructed their delivery departments with the Federal as the prime factor of economy, reliability and efficiency

Just for example:

The Motor 'Bus Transit Company of Gary, Ind., has FIVE FEDERALS.

Meier & Frank, the largest department store in Oregon are operating four FEDERALS in their deliveries.

The city of Portland (Ore.), has one FEDERAL in service in its Fire Department and four FEDERALS in its Water Department. Since last January the Marshall, Field & Co., of Chicago have purchased eight FEDERALS.

The Emmons Draying Company of San Francisco have bought four FEDERAL Trucks since January and are using them for interurban delivery.

Breuner's (the huge furniture house of San Francisco) are operating a fleet of FEDERALS, not only in 'Frisco, but in their branches in Oakland and Sacramento.

The Ward Bread Company of New York in 1911 and 1912 bought ten FEDERAL Trucks and are now operating all of them in their huge deliveries.

The man who investigates an investment and then comes back to multiply his first investment ***ten times*** must be pretty well satisfied with that investment—mustn't he?

That is where the FEDERAL TRUCK is strongest today—with FEDERAL owners

Federal Motor Truck Co., New Factory Dept. A Leavitt and Campbell Avenues, **Detroit, Mich.**

Garford TRUCKS

JAMES Butler, Inc., the big New York wholesale grocer and importer, will tell you of the economy of Garford trucks. Sixteen Garford trucks carry this firm's immense trade. Customers from the Battery to Tarrytown are served. The James Butler fleet consists of 5 Garford five-ton trucks and 11 Garford one-ton trucks. They were bought after two years' costly experiments with other trucks.

Garford trucks are not experiments. They are built by the oldest, most conservative and reputable plant in the country. They are machine made trucks—not assembled—backed by a real guarantee.

The frame of the Garford is pressed steel, five times reinforced by sturdy cross sections. Remember, it is a truck's backbone. Axles and steering knuckles are of similar strength; springs are of Krupp steel.

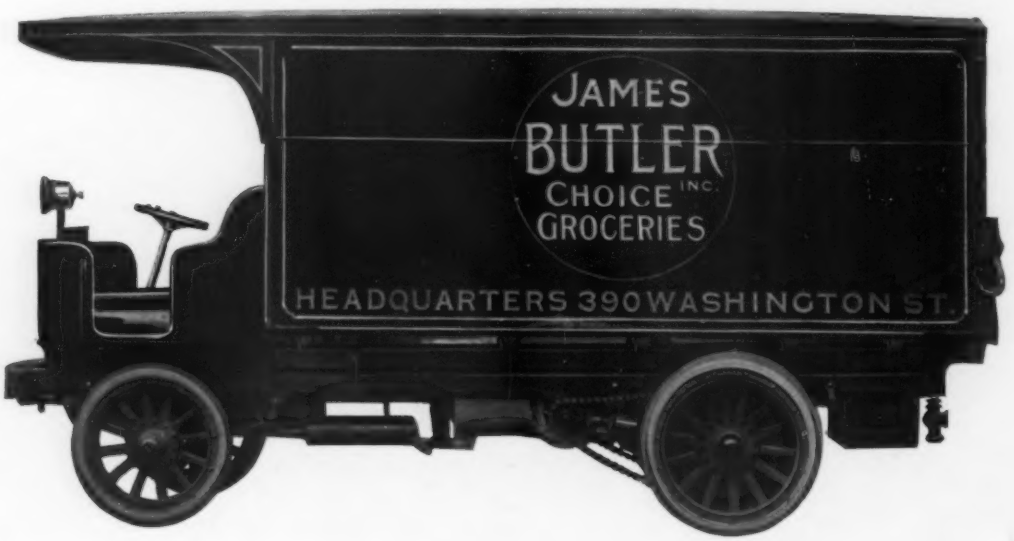
The great, powerful Garford motor is proof against tampering drivers. The motor can not be raced, nor can a 10-mile pace be exceeded. An automatic governor looks out for the owner's interests. Straight line chain drive induces gigantic power. A four speed transmission furnishes a gear ratio for every possible traffic condition.

Excessive overhang is eliminated on the Garford because the motor is rightly placed—alongside and not under the driver's seat. Motor and driver do not take up half the frame. With short wheel base and overhang, Garford trucks are the handiest in the world.

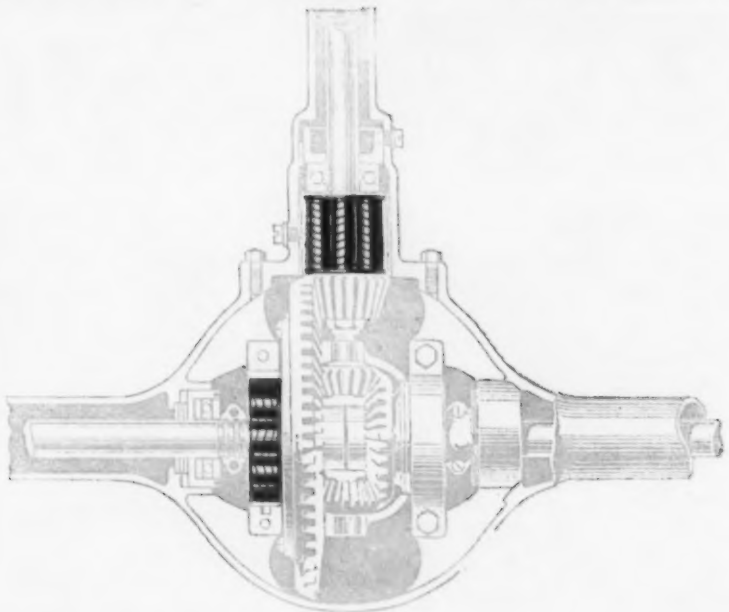
Garford Trucks use least gasoline and oil; they operate for 30 per cent. less than others. Each tire is guaranteed for 10,000 miles.

Write us today. Tell us your business and delivery problems. We will give you interesting figures.

The Garford Company, Elyria, Ohio



FLEXIBILITY SAVES THE GEARS



SHOCK LOADS IN MOTOR CARS are enormous. Even ordinary speeds on average roads produce vibrations which would make any riding impossible without the use of springs, absorbers, etc.

NO PRINCIPAL MEMBER of the motor car even approaches a condition of absolute rigidity. An automobile bearing, then, whose successful operation depends upon accurate alignment of frame and shafts cannot give its best service under these conditions.

AXLE GEARS PARTICULARLY must be protected from the results of this rough usage. Any mounting which makes use of rigid bearings can only result in teeth unevenly worn, chipped or wholly broken off.

MIGHTY LITTLE FLEXIBILITY is in a solid ball or roller. The one bearing in which it really exists is the Hyatt. There the spiral rolls carry gears in accurate mesh under service conditions, at the same time cushioning shocks and relieving surrounding parts of excessive strains and stress.

HYATT ROLLER BEARING CO.
DETROIT, MICHIGAN

KOEHLER COMMERCIAL CAR

CARRYING CAPACITY 1600 LBS. $ PRICE 750.

OPEN FLARE-BOARD TYPE

Large and roomy. Inside measurements, 44 inches wide, 84 inches back of driver's seat to rear. Flare-boards, 17 inches above floor. Strongly ironed throughout, also ironed to receive four-post canvas top, which can be had from stock at $40 additional. CAPACITY, 1600 lbs. PRICE, $750.

Prices of various types of bodies range from $40 to $150 extra.

Various types of bodies are obtainable. The Panel Type B is an unusually handsome job. Price, $150 extra. Inside measurements 42 inches wide, 53 inches from floor to top, 84 inches back of driver's seat to rear. Canvas side body similar in appearance to Panel Type B—$50 extra.

Without Question the Best Value on the Market

Remarkable carrying capacity with simplicity in design that makes the car fool-proof. The excellence of material and construction is apparent to all who know motor cars. The great value and reasonable price puts the KOEHLER in a class by itself.

This Delivery Wagon stands supreme in its class. No other wagon possesses the same capacity at the price, nor the excellent features. Only the highest grade materials are used—even down to the little details. Bosch Magneto, Schebler Carburetor, all nickel-steel construction, etc.

SPECIFICATIONS

MOTOR—2-cylinder opposed, 22-24 H. P. Lubrication mechanical and integral with motor; 300 miles one supply of oil.

COOLING—Thermo-syphon system.

IGNITION—Bosch High-Tension Magneto. No coil or batteries required.

CONTROL—Left hand, throttle lever on steering column.

DRIVE—Direct line double universal joint with jack shaft. Final drive from jack shaft to rear wheel sprocket through double side chains.

TRANSMISSION—Planetary type. All gears genuine chrome nickel steel, hardened throughout.

BRAKES—Service brakes on jack shaft. Emergency brakes simple in design, extraordinarily powerful, operated independently.

TIRES—2 in. Solid Rubber.

TREAD—58 in.

CAPACITY—1600 lbs.

WHEELBASE—85 in. Wheels—36 in. front, 48 in. rear.

SPEED—4 to 16 miles per hour.

PRICE—$750 to $900, depending on body equipment.

OIL TIGHT CASE—In which transmission, differential, bevel gears and metal to metal clutch run in a CONSTANT OIL BATH. 1,000 miles with one supply of oil. Designed by L. E. Schlotterback, America's foremost commercial car engineer. Built in a large, modern factory, splendidly equipped. Sales Department under supervision of H. J. Koehler, Pres. and Treas., the largest distributor of automobiles.

"Built in Newark, N. J."

DEALERS: Write TODAY for Agency Terms and Full Particulars

Address all correspondence to

H. J. KOEHLER S. G. Co., 1709 Broadway, New York, N. Y.

COMPLETE INSTALLATIONS — GASOLINE GMC ELECTRIC — TRUCKS — COMPLETE SERVICE

Far-Seeing Motor Truck Policy

A fleet of G M C trucks in the service of Waite's Storage Warehouse, New York City

DEVELOPMENT of the motor truck industry and the demand of purchasers for standardization of equipment has been marked during the past few months.

General Motors Truck Company, from its inception, manufactured in its *own* factories both gasoline and electric trucks to sell under the "G M C" mark. It was the *first* to see this necessity for standardization as well as the manufacture of models of all standard capacities, ranging from 1000 lbs. to 6 tons.

It will be remembered that General Motors Truck Company exhibited trucks of both powers and various capacities at all the leading shows last winter, beginning with the Madison Square Garden exhibition.

Today, the concern that installs motor trucks is looking to the future and buys from the makers who will be in a position to fill *future* requirements, whether duplicate orders or different types and capacities.

Understand just what "standardization" means —today and five years from now!

With "Standardization" consider the *standing of the maker*—responsibility, capacity, mechanical and financial resources.

General Motors Truck Company's mechanical capacity, engineering ability and financial prestige places it foremost among the world's greatest manufacturers.

Investigation will prove conclusively that this remarkable manufacturing organization has been farsighted in its plans and broad in its provisions for the "service" of its customers.

It has carefully planned to meet every requirement. Its policy and organization have been built upon sound, safe, permanent lines.

Correspondence from prospective purchasers and dealers is invited. Write for gasoline and electric catalogs.

GENERAL MOTORS TRUCK COMPANY

29 Cadillac Ave., PONTIAC, MICHIGAN

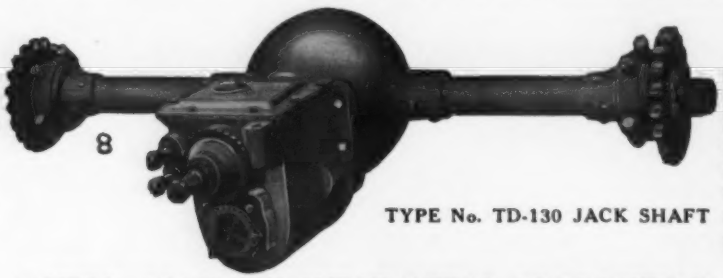
Branches: New York, Chicago, Boston, Philadelphia, Kansas City, Detroit, St. Louis.

SHELDON

ONE TON EQUIPMENT
It's Ready For You

When we say this equipment is ready, we mean it has been thoroughly tried out, and that we are in a position to accept orders for prompt shipment.

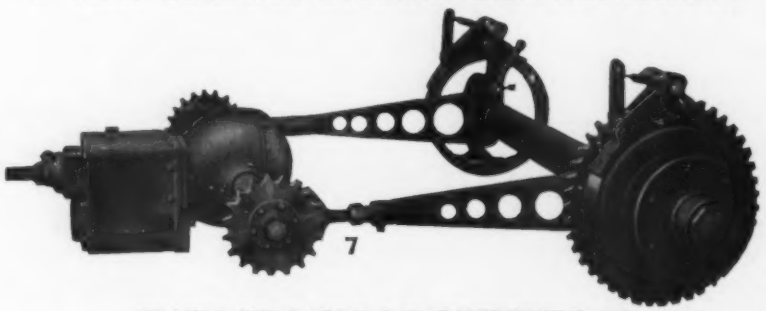
Radius Rods Designed to take care of all operating conditions



TYPE No. TD-130 JACK SHAFT

14 inch Brakes. Pressed Steel Drums, with sprockets riveted on

A VERY COMPACT SUBSTANTIAL PROPOSITION



BRAKES AND RADIUS ROD EQUIPMENT D-132

Our One Ton Front Axle is I-Beam style with spring pads forged integral. Rear Axle also has integral spring pads.

We furnish a standard set of springs to go with this One Ton Equipment.

Order Axles, Jack Shaft, Transmission, Brakes, Radius Rods and Springs all from one source—one shipment.

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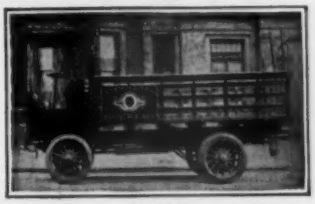
POLACK TYRES

10,000 MILES
CONTINUOUS SERVICE

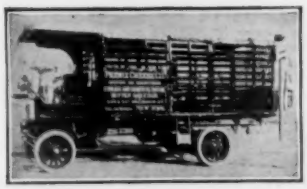
POLACK TYRES

GARFORD

POLACK TYRES give a greater continuous mileage than any other truck tyre manufactured.



ALCO



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POLACK TYRES have the maximum resiliency and will reduce your expense for mechanical repairs.

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GRAMM

Use them on your Electric Truck and increase its battery efficiency and thereby the radius of operation.

Use them on your Gasoline Truck and keep it on the road earning money instead of in the repair shop losing money

PIERCE-ARROW

COMMER

Every Wise Truck Owner Is Doing It

Doing What?

Getting rid of the old and dangerous methods of storing gasolene and oil and installing

BOWSER UNDERGROUND STORAGE SYSTEMS

Unless gasolene is kept underground in a properly constructed tank it loses strength. That means you lose power. Not only that, but poor gasolene smuts the spark plug and aids in carbonizing the cylinders. Dirty lubricating oils cut the bearings and wear out the machinery.

You Bought Trucks Because of Their Economy, Why Not Increase Their Economy Still More by Using a Bowser Storage System?

Buy oil and gasolene in quantities and get a better price. Prevents all loss from evaporation and waste. Saves all the gas energy for your engine, which means more power.

800,000 Bowser Tanks Now In Use

Do you think these car and truck owners would have purchased BOWSER Systems for storing and handling their gasolene if it is not a good investment?

Isn't this fact sufficient argument to convince YOU that they must do what we claim?

Positive Proof of Bowser Quality

The U. S. Government, Post Offices, Fire Departments and Trucking Companies have installed BOWSERS and are making money by it—SO CAN YOU.

The Bowser Gasolene Filter

Eliminates all water and foreign substances, thus insuring clean gasolene.

The Bowser Gallon Meter

Keeps an accurate check on every drop of gasolene used and the pump locks, thus preventing its operation by an unauthorized person.

The Bowser Continuous Flow Pump

Is an advanced type of gasolene pump designed to meet present existing conditions.

Thirty Gallons Per Minute

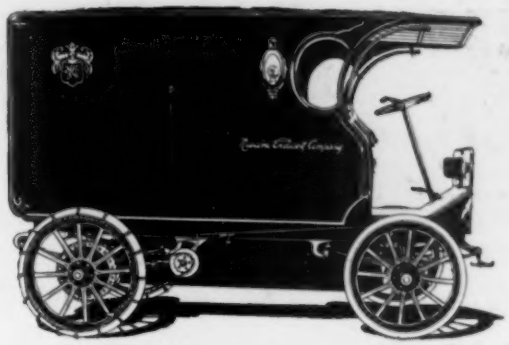
This new Bowser pump is particularly designed to meet your requirements. It means greater speed, accuracy and efficiency in service. When you have to get out 20 trucks in 20 minutes you need it.

Investigate the Bowser System. Ask us for details. Send for catalog No. 11.

S. F. BOWSER & CO., Inc., Ft. Wayne, Indiana

New York Boston Philadelphia Minneapolis St. Louis Atlanta Dallas San Francisco Chicago Toronto

Manufacturers of self-measuring pumps, oil storage systems and tanks, oil filtration and circulating systems, self-registered measures, etc. Established 1885



THE Detroit ELECTRIC

Commercial Vehicles

MAKE MONEY—Save Money

With a Detroit Electric Commercial Vehicle you make money and save money. You make money by ***increasing*** your delivery radius and the ***number*** of deliveries.

You save money because electricity is not only the cheapest form of power, but the simplest to keep in operation.

There is no complex mechanism about a Detroit Electric Commercial Vehicle. Frequent stops can be made quickly and noiselessly. When the car stops the power stops—and the ***cost.***

The average mileage is high because of the quick get-away in congested traffic and stops.

Detroit Electric Commercial Vehicles are now used in fifty-four (54) lines of business in fifty-six (56) of the largest foreign and American cities. In nearly every instance where Detroit Electric Commercial Vehicles have been in use for any length of time, we receive ***re-orders.***

Detroit Electric Commercial Vehicles reduce fire hazard. They are admitted at all wharves and freight terminals. We have a 48-page catalog which will be sent upon request. We are always glad to give specific information regarding individual requirements.

We believe an investigation will be the means of ***saving*** you money and thereby ***making money*** for you.

Commercial Vehicles of the character illustrated herein will be exhibited at the Boston Electrical Show, September 28th to October 26th, and also at the New York Electrical Show, October 9th to 19th inclusive.

ANDERSON
ELECTRIC CAR COMPANY
456 Clay Ave., Detroit, Mich.

BRANCHES:
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Chicago: 2416 Michigan Avenue
(Also Branch at Evanston, Ill.)

Boston
Brooklyn
Buffalo
Cleveland
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Selling representatives in most leading cities

Packing House Delivery Service With Baker Electric Trucks

Other Records of Economy and Service

Packers, Meat and Fish Dealers, of Chicago, recognize in the Baker Electric Truck practical solution for the rapid, economical handling of city delivery work with frequent stops. The Truck of the Sulzberger & Sons Company shown in the above illustration is in service on Chicago streets, making an average of 50 miles daily, and never in the shop.

Baker Trucks Prevail Where Efficiency Counts

It is significant of the superior efficiency of Baker Electric Trucks that so many of them are purchased in fleets by Express and Public Service Companies, whose transportation experience has taught them the economy of paying a little more for unusual construction and of saving a good deal more in cost of upkeep. The Express Companies have to date installed fleets of Baker Trucks in 20 leading cities of the United States.

Cost of Parcel Delivery Reduced Over 50% by Baker Cars.

Baker Trucks have reduced the cost of parcel delivery for several department and dry goods stores more than 50%. During December, 1911, eight Baker Electric delivery wagons each made an average daily mileage of 35 miles, an average daily delivery of 247 packages at a total cost of 2.7 cents per package. They are equally effective during a slack season, since a portion of the fleet may be temporarily idle at no expense.

Baker installations succeed; the chassis is right, the service is backed up by an efficient, resourceful factory organization. The Baker Bureau will furnish you reliable cost figures covering electric truck equipment suitable for your business.

THE BAKER MOTOR-VEHICLE CO. **Truck Department**

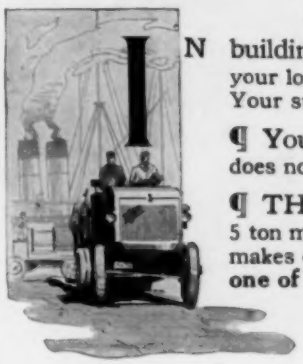
72 West 80th Street, Cleveland, Ohio ***Dealers in Leading Cities***

Oldest and Largest Manufacturers of Electric Vehicles in the World

Also manufacturers of Baker Electric Broughams, Coupes, Victorias, Etc.

THE Durable Dayton

A Word to Thinking Dealers



IN building a **lasting** business,—one which will endure indefinitely, your local business reputation must be backed up with dependable goods. Your success depends largely upon the product you sell.

¶ You cannot afford to sell your merchants a motor truck which does not possess lasting qualities.

¶ THE DURABLE DAYTON line of motor trucks (2, 3 and 5 ton models) rank exceptionally high in the industry. There are several makes of high-grade trucks on the market today—**the Durable Dayton is one of the several.**

¶ We seek business connections with that class of dealer who has the honest desire to build his business similar to that of this company. A business of stability, reliability and conscientious dealing.

¶ We are continually creating business for Durable Dayton Dealers with our national advertising campaign, sales co-operation and personal work in the field.

¶ We are best known by the expressed satisfaction of Durable Dayton users throughout the country.

Write promptly for detailed information and complete catalog

The Dayton Auto Truck Company, Dayton, Ohio

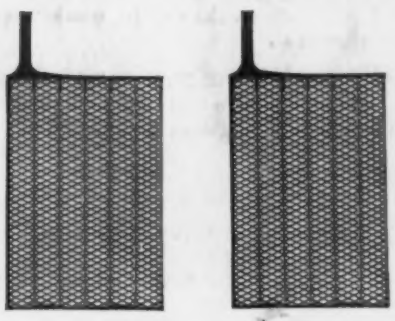
Factory Branch, 1700 Wabash Ave., Chicago

3 Ton Durable Dayton in Service with Sauer's Express—Springfield, Mass.

PHILADELPHIA THIN PLATE STORAGE BATTERIES

DIAMOND GRID TRADE MARK

Six years' improvements in storage batteries



have resulted in 40% increase in car mileage.

The greatest mileage and lowest operating cost are obtained with PHILADELPHIA THIN PLATE batteries

DO YOU USE THEM?

DIAMOND GRID TRADE MARK

PHILADELPHIA STORAGE BATTERY CO.

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